

University of Alberta

**Usefulness of the Assessment Centre Approach
in Identifying Management Potential**

by

William A. DuPerron



**A thesis submitted to the Faculty of Graduate Studies and Research in
partial fulfillment of the requirements of Doctor of Philosophy**

in

Educational Administration

Department of Educational Policy Studies

Edmonton, Alberta

Spring 1997



National Library
of Canada

Acquisitions and
Bibliographic Services

395 Wellington Street
Ottawa ON K1A 0N4
Canada

Bibliothèque nationale
du Canada

Acquisitions et
services bibliographiques

395, rue Wellington
Ottawa ON K1A 0N4
Canada

Your file Votre référence

Our file Notre référence

The author has granted a non-exclusive licence allowing the National Library of Canada to reproduce, loan, distribute or sell copies of his/her thesis by any means and in any form or format, making this thesis available to interested persons.

The author retains ownership of the copyright in his/her thesis. Neither the thesis nor substantial extracts from it may be printed or otherwise reproduced with the author's permission.

L'auteur a accordé une licence non exclusive permettant à la Bibliothèque nationale du Canada de reproduire, prêter, distribuer ou vendre des copies de sa thèse de quelque manière et sous quelque forme que ce soit pour mettre des exemplaires de cette thèse à la disposition des personnes intéressées.

L'auteur conserve la propriété du droit d'auteur qui protège sa thèse. Ni la thèse ni des extraits substantiels de celle-ci ne doivent être imprimés ou autrement reproduits sans son autorisation.

0-612-21565-2

Canada

University of Alberta

Library Release Form

Name of Author: William A. DuPerron

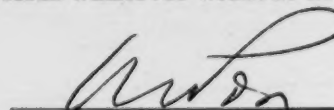
Title of Thesis: Usefulness of the Assessment Centre Approach
in Identifying Management Potential

Degree: Doctor of Philosophy

Year this Degree Granted: 1997

Permission is hereby granted to the University of Alberta Library to reproduce single copies of this thesis and to lend or sell such copies for private, scholarly or scientific research purposes only.

The author reserves all other publication and other rights in association with the copyright in the thesis, and except as hereinbefore provided, neither the thesis nor substantial portion thereof may be printed or otherwise reproduced in any material form whatever without the author's written permission.



14724 - 41 Avenue

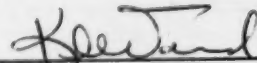
Edmonton, Alberta T6H 5N7

March 18, 1997.

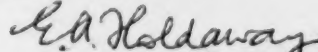
University of Alberta

Faculty of Graduate Studies and Research

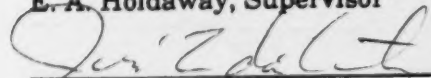
The undersigned certify that they have read, and recommend to the Faculty of Graduate Studies and Research for acceptance, a thesis entitled Usefulness of the Assessment Centre Approach in Identifying Management Potential, submitted by William A. DuPerron in partial fulfillment of the requirements for the degree of Doctor of Philosophy in Educational Administration.



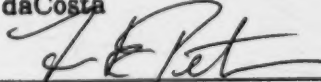
K. L. Ward, Chair



E. A. Holdaway, Supervisor



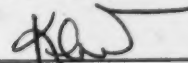
J. daCosta



J. F. Peters



L. P. Steier



J. G. T. Kelsey, External Reader

24 February 1997

ABSTRACT

The purpose of this study was to examine the usefulness of the assessment centre method in predicting management success in a public sector organization. The study also attempted to identify the characteristics of high potential managers and whether these characteristics could be measured and predicted by an assessment centre more usefully than by traditional methods.

The management assessment centre method is a procedure which has been mainly used in private sector organizations for identifying critical management talent by simulating actual job requirements and having candidates perform job-related tasks and simulation exercises while being observed by trained assessors. The comprehensive assessment centre should involve multiple raters, multiple simulations, and valid and reliable psychometric procedures for the purposes of ascertaining management potential of participants and their required career development activities.

In this study, a government department used a modified assessment centre approach to obtain data about five criterion areas using a subject sample of 82 experienced managers from a pool of 181 management personnel. These five criterion areas were problem-solving, supervisory skills, interpersonal skills, work habits, and management potential. Also, data on a number of demographic variables were collected on each of the 82 managers. Two years later, the author conducted interviews with the seven members of the senior management team of the department to collect follow-up data. These follow-up data included a rating by senior managers of the five criterion

areas measured by the assessment centre as well as readiness for promotion. The original assessment data of the sample of the 82 managers who were in the assessment centre, together with the ratings obtained from senior managers two years later, constituted the basis for the research reported in this thesis.

This study found that the assessment centre evaluations of future management performance were better predictors than were those made by senior managers. It also found that the assessment centre approach can be a valid technique for predicting (and thus selecting) the future management potential of individuals. Further investment in developing and competently implementing the assessment centre method for the selection and placement of civil service managers would do much to enable the public sector to address the challenges facing it.

ACKNOWLEDGEMENTS

I am very appreciative of the guidance and sage advice of my Supervisor, Dr. Ted Holdaway. His expectations of excellence and attention to detail inspired my efforts and were the encouragement I needed to complete this thesis.

I would also like to recognize the contributions of the other members of my Supervisory Committee, Dr. Joe da Costa and Dr. Ken Ward, as well as Dr. Frank Peters and Dr. Lloyd Steier who served on the final examining committee. In addition, I would like to thank Dr. Graham Kelsey of The University of British Columbia for acting as External Reader and for providing constructive comments.

I would also like to provide special thanks to Mr. Russell Sawchuk for his constant and unfailing support throughout this project.

I am also indebted to Mr. Bob King, Mr. Jack Davis, and Mr. Harvey Geddes for allowing me the opportunity to pursue my doctoral studies.

Finally, I wish to thank my parents, William and Madeline DuPerron, and the rest of my family. Their love and encouragement were the foundation that allowed me to persevere in the completion of this study.

Table of Contents

Chapter	Page
1. INTRODUCTION.....	1
Background to the Study.....	1
The Context of the Study.....	4
Organization of the Dissertation	5
2. REVIEW OF THE LITERATURE.....	7
Introduction	7
Definition of the Assessment Centre Method.....	8
The Origins of the Assessment Centre Method.....	10
The Assessment Centre Design, Techniques, Method, and Process.....	16
The Assessment Centre: Primary Purposes of Selection and Promotion	20
Use of Assessment Centres in Education	23
The Move Toward the "Development Centre"	28
Assessment/Development Centres and Organizational Change	31
Recent Innovations and Non-traditional Applications of Assessment Centres.....	33
The Uses and Advantages of Assessment Centres.....	36
Concerns and Criticisms of Assessment Centres	41
The Assessment Centre Key Players: Assessors and Candidates	46

Table of Contents (continued)

Chapter	Page
Critical Elements of the Assessment Centre: Validity and	
Reliability.....	53
Validity	54
Reliability	66
Issues Involved in Performance Evaluations	68
Performance Measurement and the Assessment Centre	
Method	70
Summary	71
3. METHOD.....	72
Background	72
Research Design	78
Population	79
Sample.....	79
General Research Question.....	79
Specific Research Questions	80
Delimitations of the Study	81
Limitations of the Study	82
Assumptions of the Study	83
Instrumentation and Data Collection.....	83
Validity	86

Table of Contents (continued)

Chapter	Page
Reliability	91
Types of Analyses	95
Summary	96
4. DESCRIPTIONS OF THE SAMPLE.....	98
Gender	98
Management Classification Levels	98
Age	101
Length of Service	101
Number of Years on Current Job	104
Educational Levels	104
Salary	104
Performance Appraisal Ratings	104
Readiness for Promotion	108
Summary	108
5. RESULTS AND DISCUSSION OF FINDINGS	111
Specific Research Question 1	111
Specific Research Question 2 (a).....	113
Specific Research Question 2 (b)	115
Specific Research Question 3 (a)	116
Specific Research Question 3 (b).....	121
Specific Research Question 4	121
Specific Research Question 5	124
Specific Research Question 6	124

Table of Contents (continued)

Chapter	Page
Specific Research Question 7	128
Specific Research Question 8	131
Specific Research Question 9	132
Specific Research Question 10	136
Summary of Results	138
Discussion of Findings	139
Reliability.....	139
Validity.....	145
Characteristics of High Potential Managers	147
Summary of Discussion	147
6. SUMMARY, CONCLUSIONS, AND RECOMMENDATIONS	149
Overview to the Study	149
Major Findings	152
Discussion and Conclusions	153
Reflections and Recommendations for Practice	157
Recommendations for Further Research	160
Concluding Statement	162
References.....	165
Appendix A: Letter to A.W. Fraser & Associates	192
Appendix B: Letter to Deputy Minister	194
Appendix C: Structured Interview Questionnaire (1990)	197

List of Tables

	Page
1. Percentage Distributions of Sample, Department, and Total Public Service Managers – by Gender	99
2. Distribution of Classification Levels of Sample, Department, and Total Public Service	100
3. Age Distributions of Sample, Department, and Total Public Service (as of June 1988)	102
4. Distributions of Length of Service of Sample, Department, and Total Public Service (as of June 1988)	103
5. Distribution of Years on Current Job of Sample and Department (as of June 1988)	105
6. Distribution of Educational Levels of Sample and Department (as of June 1988)	106
7. Distribution of Salaries of Sample and Department (as of June 1988)	107
8. Distribution of Average Five-Year Performance Appraisal Ratings of Sample and Department	107
9. Distribution of Senior Managers' Perceptions of Readiness for Promotion of Sample (1990)	109
10. Percentage Distribution of Senior Managers' Summary Evaluation of Current Performance of Sample (1990)	110
11. Assessments of Management Potential of Sample by Assessment Centre (1988), Department (1988) and Department (1990)	112

List of Tables (continued)

	Page
12. Percentage Distribution of Assessment Centre Results and Senior Managers' Perceptions of Skills Levels of Sample.....	114
13. Correlation Coefficients Between Ratings Given by Seven Senior Managers of Interpersonal Skills of Sample (1990)	118
14. Correlation Coefficients Between Ratings Given by Seven Senior Managers of Supervisory Skills of Sample (1990).....	119
15. Correlation Coefficients Between Ratings Given by Seven Senior Managers of Efficiency of Work Habits of Sample (1990).....	120
16. Correlation Coefficients Between Ratings Given by Seven Senior Managers of Problem-solving Abilities of Sample (1990).....	122
17. Correlation Coefficients Between Ratings Given by Seven Senior Managers of Management Potential of Sample (1990).....	123
18. Correlation Coefficients Between Ratings Given by Seven Senior Managers of Readiness for Promotion to the Next Level of Sample (1990)	125
19. Correlation Coefficients Between Ratings of Readiness for Promotion by Seven Senior Managers (1990), and (a) Assessment Centre (1988) and Department (1988).....	126

List of Tables (continued)

	Page
20. Correlation Coefficients Between Ratings Given by Seven Senior Managers of Current Performance of Sample (1990).....	127
21. Correlation Coefficients Between Ratings of Current Performance (1990) and Management Potential by Assessment Centre (1988) and Department (1988)	129
22. Percentages of Responses of Senior Managers in 1990 Who Considered That the 1988 Assessment Centre Potential Ratings Were "Valid"	130
23. Correlation Coefficients Between Ratings of Skill Areas and Management Potential by the Assessment Centre (1988) and Senior Managers (1990)	133
24. Correlation Coefficients Between Ratings Given by Senior Managers for Four Skill Areas and for Management Potential, Readiness for Promotion, and Current Performance (1990).....	134
25. Correlation Coefficients Between Selected Variables and Management Potential Ratings by Assessment Centre (1988) and Department (1988)	135
26. Means of Selected Demographic Variables and Ratings by Senior Managers in 1990 for Sample and Other Department Managers	137

List of Tables (continued)

	Page
27. Summary of Inter-rater Correlation Coefficients (1988 and 1990).....	140
28. Number of Statistically Significant Inter-rater Correlation Coefficients for Each Senior Evaluating Manager (1990).....	142

List of Figures

	Page
1. Human Resource Development and Planning Model.....	74
2. Relationships Between Intraorganizational Factors, Evaluation, and Succession Outcomes.....	154

Chapter 1

INTRODUCTION

This chapter includes a discussion of the background to the study, its context, and organization of the thesis.

Background to the Study

The public sector is not immune to the dynamic changes taking place in the business world. Globalization of markets, structural and technological developments, and changing demographics all spell a need for increased competitiveness and greater management competence.

In addition to the above changes, Osbaldeston (1989) and Plumptre (1988) have indicated that public service managers face the following challenges:

1. Government restraint and staff reductions will probably continue for many years.
2. Governments will continue to become more complex with the addition of quasi-independent agencies, review processes, and changes in the role of Parliament and Legislative Assemblies relative to public sector management and services.
3. The rapid transfer of ministers, deputy ministers, and other senior public sector executives will continue, and as a result managers will have to adjust constantly to changing priorities and leaders.
4. The increasing complexity of the public service environment combined with rapid changes at the senior executive level will mean that senior executives will spend more time assisting ministers and liaising between departments and the external environment.

5. Program management will be increasingly affected by other departments, other governments, quasi-independent agencies, the private sector, the press, and interest groups.

6. The continuance of staff shrinkages, technological change, and the requirement to increase the authority of supervisors and employees will lead to some pressures to reduce the size of the middle management population, particularly the number of levels of hierarchy in departments.

7. The knowledge requirements to manage programs in the context of national, international, social, economic, legal, and technological trends will become increasingly demanding.

8. Managers will face continuing problems attracting and retaining good staff and providing the rewards and incentives to motivate them. Such difficulties will be exacerbated by the continued existence of inflexible government compensation policies and restrictive reward systems.

9. Technological change in areas such as computerization, communications, and other areas will create significant changes in the ways that middle managers do their work.

Such developments are forcing critical changes in management. In my opinion, these developments and changes have given rise to the following trends and requirements:

1. The need exists for strong leadership and a strategic vision. Communicating these transformational values is as important as having ways to measure performance in achievement of the vision.

2. Organizational flexibility is becoming increasingly important. This means "flatter" organizations, increased use of cross-functional teams, and a more effective mix of managers with different personality types.

3. Human resource management will have to be different from that which currently exists. More appropriate compensation and benefit plans will have to be developed to reward high performance. Changes will be required in the performance appraisal systems. Organizations will have to be more conscientious concerning the ways that they address issues surrounding performance assurance.

4. A much greater requirement is emerging for improved customer relations while at the same time defining the limits of service provided to the public. Therefore, the adoption of more accurate performance measures and improving the levels of proficiency by public service managers all need to be addressed.

The job of a manager in government is both demanding and difficult. Managers will continue to have to learn how to manage in an uncertain and complex environment. They will have to know how to do more with less and they will have to be more sensitive to the perspectives and needs of their political masters as well as the general public. Managers in the public sector will be increasingly required to possess intimate knowledge of their responsibility areas as well as having an understanding of the global and national factors that affect their programs.

In view of these demands, one would think that simplistic approaches to public service manager selection should have become

anachronistic. Interestingly and surprisingly, this does not appear to have been the case. Traditional personnel gate-keeping systems have been conspicuously out of step with the emerging public sector human resource requirements. The interview method for example, as the primary emphasis in selection processes has remained to this day in many organizations still the primary, if somewhat primitive, means of choice. Over the last 50 years, however, the notion that the assessment centre method could replace or augment the selection interview has gained support. This method has achieved a considerable amount of credibility and acceptance as a state-of-the-art human resource technological innovation.

Most of the literature on the assessment centre method is related to its use in private sector organizations. This thesis examines the assessment centre method as a means to improving the management of public sector human resources. An important component of this study was the conducting of an extensive literature review. This component was pursued throughout the period of the study. The findings of an extensive assessment centre research project constitute the main data section of the thesis.

The Context of the Study

In early 1986 a government department in Alberta began planning for a number of expected changes that would significantly affect the management positions of the organization and the skills needed in these roles. A broadly defined planning and management review was deemed to be the direction in which the organization would proceed. The primary changes which drove this planning process and

the department-wide management review included government fiscal restraint, very significant staff reductions, rapid transfer of management responsibility areas, and the overarching concern on the part of the chief executive officer concerning the depth of management talent and succession preparedness within the organization.

By mid-1986, in my capacity as senior manager of human resource services of the government department, I initiated contact with a number of industrial psychologists and management consulting firms for purposes of undertaking the delivery of a range of contracted services related to the organizational planning and management review. A critical component of the organizational planning and management review was the inclusion of a management assessment centre that would in turn serve as a foundation for organizational succession planning. A preliminary assessment centre was eventually established and included the participation of 82 junior and middle managers. These 82 junior and mid-level public service managers who participated in the assessment centre method are the primary focus of study for this research.

Organization of the Dissertation

The remainder of this dissertation is organized in the following manner. Chapter 2 is a review of the literature and research relevant to this study. Chapter 3 describes the research method. It includes the research questions, an explanation of the interview schedule, the demographic data collected, and the procedures used in the investigation. Chapters 4 contains a description of the sample. Chapter 5 provides a description of the results and discussions of findings of the

study. Chapter 6 presents a summary of the study, a statement of conclusions, and recommendations for further research.

Chapter 2

REVIEW OF THE LITERATURE

This chapter includes an in-depth profile of the history and research literature pertaining to the assessment centre method. A detailed discussion is also provided concerning the purpose, design, techniques, processes, limitations, advantages, and variations of the assessment centre method. In addition, some detailed information is provided on assessment centres as related to education and development.

Introduction

The assessment centre has been a topic of much discussion, both in applications and methodology, and in research and innovation. As the literature reveals, several areas have been the main focus of researchers and practitioners of Industrial/Organizational Psychology, Forensic Psychology, Clinical Psychology, Management, Training, and Human Resources. These areas include Selection and Promotion, Statistical Analyses, Candidates and Assessors, Development Centres, and Innovations. These areas were reviewed in detail for the present literature review. Research on the predictive validity and fairness of assessment centres is reviewed, and areas such as construct and content validity, the processes of assessor decision-making, the roles of exercises and criteria, and the value of the assessors' conference are explored.

Various applications have contributed to the evolution of the assessment centre during the past five years as identified later in this chapter. Applications in non-traditional forms have also come to fruition during this time. Many different organizations and industries

of the United States, Europe, and other countries have explored and applied the assessment centre, in traditional applications, as well as in new, innovative forms. The traditional application of the methodology has been challenged by researchers asking stimulating questions around validity, utility, the participants, the exercises, and the assessors. Details about these various aspects of the assessment centre method are discussed in this chapter.

Definition of the Assessment Centre Method

The primary purpose of the assessment centre method is to evaluate either existing employees within an organization or employee candidates on sets of job variables by using psychometric procedures that are both job-related and relevant to career success.

The comprehensive assessment centre method is a multifaceted and interdisciplinary analysis of both an individual's abilities and developmental requirements within specific job-skills areas, personal characteristics, and organizational contexts. The assessment centre method is both a human resources and psychometric system of techniques that include a comprehensive set of strategies which are used for identifying the strengths and weaknesses of individuals for specified and relevant organizational purposes.

Nosin (1988) defined the management assessment centre method as a selection procedure for identifying critical management talent by simulating actual job requirements and having candidates perform on these job-related tasks while being observed by trained assessors. The comprehensive assessment centre should involve multiple raters, multiple simulations, valid and reliable psychometric procedures for

purposes of best determining management selection, and required career development planning.

Also, Nosin (1988) stated that beyond the required psychometric testing procedures "the heart of the assessment centre is a detailed job and task analysis which delineates key performance requirements for the target position" (p.1). Subsequent to conducting the job and task analysis, an inventory of critical behaviors and a set of management dimensions are developed around the various management tasks and skills requirements. Simulations which measure these management tasks and skills dimensions are then developed by experienced management teams and human resource professionals. Typically the simulations are pilot-tested and redeveloped; after assessor training, the actual assessment centre simulation components can then be implemented.

At one time, the best selection processes for administrators were simplistic, but acceptable, when both the world and life in organizations were much less competitive and complicated. As organizations and the administrative positions contained within them became more complex, simplistic approaches to administrator selection should have become anachronistic. As mentioned previously, this does not appear to have been the case.

The interview as the primary emphasis for administrator selection has remained to this day in many organizations still the primary, if somewhat primitive and unreliable, means of choice. Over the last 50 years, however, the notion of an assessment centre to replace or augment the selection interview has been growing and has gained a

significant amount of credibility and acceptance as a state of the art human resource innovation. Legal challenges to incompetent personnel decision processes in organizations, the increased sophistication of psychometric testing instruments, and a great deal of research that has been reported by industrial psychologists and human resource professionals concerning the accuracy, value and utility of the assessment centre method have all contributed to its increased usage and legal defensibility.

Origins of the Assessment Centre Method

Yan and Slivinski (1976) reported that the origins of the assessment centre began in Germany in 1915 with the first attempts at psychological testing processes for motor transport drivers in the armed forces. During the First World War, psychological testing was extended within the German military to select pilots, sound detector operators, wireless operators, and anti-aircraft personnel. Ironically, a full-scale assessment centre did not evolve in Germany until the signing of the 1918 Treaty of Versailles. The German high command had great confidence in the processes developed to that time and also felt that the assessment centre concept held even greater potential as a sophisticated human "technology." The Treaty of Versailles restricted the German defense forces to a limit of 100,000 uniformed personnel which therefore required, from the German perspective, a selection procedure that would ensure that only the best and the brightest were inducted and then groomed to the officer ranks.

By 1931 the German War Ministry had established the High Command Central Psychological Laboratory which served as the

national military assessment centre for most of the German armed forces. Both Ansbacher (1941) and Farago and Gittler (1941) provided descriptive research data for other western nations as to the practices and procedures of German assessment techniques. The procedures utilized in the German military assessment programs were considered to be state of the art at the time, but they were somewhat primitive by today's standards.

Wendel and Sybouts (1988) reported that the German military assessment program procedures were based on the two principles: (a) holistic impression and observation of tested performance, and (b) naturalistic observation based on individual candidate characteristics and behaviors in natural, unsimulated circumstances. The German military assessment program, to its credit, included the combined use of multiple assessors and a variety of assessment techniques. Wendel and Sybouts (1988) reported also that the major difficulties of the German military assessment program were the lack of standardized administration, testing, and reporting procedures.

Despite the shortcomings in the empirical validation of the German military assessment program by today's standards, the German military believed their program to be extremely successful and had great confidence in the process. The Allies also believed that there was much to be gained by the use of the assessment centre method and emulated the program of the German High Command. According to Yan and Slivinski (1976), Canada in 1939, Great Britain in 1941, the United States in 1943, and Australia in 1941, each as part of their war effort,

followed the Germans in establishing military and officer candidate assessment centres.

The assessment centre and related work conducted by the Office of Strategic Services (OSS) in the United States has received most of the attention in the professional literature of wartime assessment centre applications. The OSS, which was the forerunner organization to the Central Intelligence Agency (CIA), was charged with the responsibility to select a wide range of personnel from saboteurs to secretaries in order to assist with the war effort in top secret military missions. As suggested in much of the historical literature, the initial OSS assessment procedures were crude, but they evolved rapidly to more sophisticated techniques. As the OSS assessment centres grew in complexity and sophistication, techniques such as standardized tests of intelligence, biographical inventories, and verbal and linguistic abilities tests were used for purposes of initial candidate screening. Subsequent to candidate screening the OSS assessment methods then became focused on testing for particular skills and abilities such as code deciphering, general and specific problem solving, leadership skills, tolerance to stress, and the capacity to work with others. These skills and abilities were assessed through the use of situational exercises, specific problem-focused simulations, and leaderless group discussions. Wendel and Sybouts (1988) described the primary dimensions of the program which included motivation, practical intelligence, emotional stability, interpersonal relations, leadership, observation and reporting abilities, and propaganda skills. The reported experiences of the OSS war-time assessment program contributed significantly to the

knowledge base of assessment techniques that have become popular again in the late twentieth century.

In a similar vein, Moses and Byham (1977) reported that after World War II, the OSS type of assessment centre was essentially abandoned in the United States except for some internal use in intelligence-gathering operations by the Central Intelligence Agency.

These same authors also indicated that there were a few scattered attempts during the 1940s to use assessment centres for predicting success in specific academic and clinical psychology training programs but these centres had very mixed results. Moses and Byham also indicated that the successful assessment centres had proven job- and task-specific competent assessors who relied on simulations as opposed to paper and pencil techniques. These assessors made predictions in terms of specific outcomes rather than personality traits or individual characteristics.

However, nationally or federally sponsored assessment centre programs continue to exist in Canada (the Career Assignment Program of the Public Service Commission of Canada) and in Great Britain (the British Civil Service Selection Board).

In the industrial context, the development of assessment centres began to emerge in 1964 with the pioneering work of Bray at the American Telephone and Telegraph Company (AT&T) which established a unique research project during the mid-1950s. The project at AT&T was referred to as the Management Progress Study (MPS) and was originally designed to be a longitudinal research study to determine the psychological development of certain company personnel as they were

promoted within the management ranks of the corporation. The information collected on these management employees was considered highly confidential and was not accessed or employed as part of the decision processes when promotions were being considered.

Bray and Grant (1966) reported that between 1956 and 1960, 422 company employees at AT&T were evaluated in a three and one-half day assessment centre. The assessment centre focused on 25 characteristics of managerial functions and personal characteristics. The techniques employed in this assessment centre included standardized personality inventories, multiple simulation and situational tests, projective tests, a bio-data inventory, and an autobiographical essay. The utilization of non-psychologists as assessors in the AT&T project was a departure from previous assessment centres that had operated and as a consequence allowed for the rapid expansion of these methods in the business and industrial sector. The subsequent research reporting by Bray and Grant (1966) on the MPS longitudinal research project of the 1950s at AT&T found a high degree of positive prediction between program performance and management success.

Jaffee, Frank, and Preston (1985) described how the first fully operational assessment program in an industrial setting was established at Michigan Bell in 1958. Research reporting on the Michigan Bell assessment centre program also demonstrated high correlations between top performing candidates and management successes within the corporation.

During the 1960s, the use of the assessment centre method began to take hold and become widespread within the private sector. Multi-

national and American-based corporations such as IBM, General Electric, Standard Oil of Ohio, Caterpillar Tractor, Sears, The Bell Systems, Eastern Airlines, Pitney-Bowes, Ford, General Motors, and 3M, to name some of the best known, began to establish either in-house or contracted fee-for-service assessment centres.

By the late 1960s, some government agencies in the United States and Canada began to use assessment centres and to incorporate the process into their manpower and management succession planning systems.

A significant increase in the use of assessment centres occurred in the early 1970s. Jaffee et al. (1985) reported that this increase in the use of assessment centres throughout the United States civil service occurred primarily because of fair employment legislation and the greater commitment of organizations to employee career development. According to Parker (1980), the number of organizations in the United States that had instituted or used assessment centres up to that time was approximately 2,000 public and private sector organizations. The University Council of Educational Administration (Wendel & Sybouts, 1988) has researched and documented the operation of over 4,000 public and private assessment centres that are operating throughout the United States in this most recent period.

The National Association of Secondary School Principals (NASSP) has established a national assessment centre at Reston, Virginia, as well as a certification system of regional and state assessment programs for educational administrators throughout the United States. In Canada,

the University of Western Ontario has established an assessment centre specific to educational administrators based on the NASSP model.

Over the last quarter century assessment centres have been in common use in both the public and private sectors. Indications are that the assessment centre method will continue to expand and flourish throughout Western and Asian industrialized nations during the 1990s. Beyond the issue of personnel selection, the use of assessment centres as a strategy and process for establishing organizational human resource planning systems is also spreading throughout the industrialized world. Such sure signs of the growth and maturing of the discipline includes such indicators as the emergence of the Journal of Assessment Technology, the establishment of the Society of Assessment System Practitioners, and the International Congress on Assessment Centres whose membership and attendance is rapidly growing in the United States, Canada, Europe, Australia, as well as Japan and other Pacific Rim Nations.

The Assessment Centre Design, Techniques, Method, and Process

The primary purpose of the assessment centre is to evaluate candidates on a set of variables that are both job related and considered to be relevant to management success.

The major steps in the assessment centre process are the identification of criteria, design of instrumentation, observational reporting, evaluation, and candidate feedback, and consultation. The initial and most basic step in the process is the identification of criteria, that is, defining in both behavioral and measurable terms what exactly

is to be assessed. Such criteria and behaviors are focused on successful job performance for a specific job or related group of jobs. A job and task analysis is typically conducted on a specific position or family classification of related positions in order to identify the skills set to be built into the simulations of the assessment centre process. Grant and Slivinski (1970) stated that the construction of valid and reliable criteria require that they be discrete, behaviorally observable, measurable at an assessment centre, and predictive of success.

The second major step in the process of assessment centre development requires scrupulous concern for instrument design. Once the criteria have been isolated and behaviorally defined they must then be measured. Grant and Slivinski (1970) indicated that this stage required that the appropriate measurement techniques must be developed and tested.

The third major step in assessment centre development evolves around the concerns for observational reporting. The tasks, responsibilities, competence, and training of assessors, as they pertain to the observation and reporting on the assessment centre, must be established. Nosin (1987) and many other researchers and practitioners of the assessment centre method have recommended the use of audio-visual equipment and related electronic services as a means of improving the quality of observation and reporting by assessor teams.

The fourth step and area of concern and attention as recommended by Grant and Slivinski (1970, p. 8) in the development of assessment centres is evaluation. A variety and range of methodologies can be employed to satisfactorily meet the concern for rigor in

evaluation. The overriding concern as recommended in the research literature is one of "wholeness" of evaluation as opposed to focusing on isolated characteristics of the individual assessee. The final step is the structuring of feedback and consultation when designing the assessment centre. As with the overarching concern for a holistic approach to the individual in the evaluation dimension, it is also recommended in the literature that this issue apply equally in guiding the design of feedback in the assessment centre. The specific focus and ethos of the feedback process is defined in large measure by the emphasis and priorities for outcome of each assessment centre (i.e., further training and development as opposed to establishing promotional career tracks or exit counselling).

The exercises typically connected with the assessment centre, once overall design considerations have been established, are referred to as the tools and techniques of the assessment centre. Most often the tools and techniques of the typical assessment centre include a single, or occasionally two, paper and pencil tests (either a standardized personality inventory, aptitudes and interest inventory, and/or a standardized intelligence quotient test) as well as several specific job and skills-referenced simulations. Simulation exercises are the elements of technique that all assessment centres have in common. Simulation exercises, or what has been referred to by Thornton and Byham (1982) as situational or performance testing, are most often job-specific, include a time-limited information review, and require interaction on the part of the assessee with an individual or group. This interaction phase and the handling of the informational materials, as

they pertain to the problem-solving requirements for the individual or group, is the focus of assessee competence and evaluation by the assessor or assessment teams. Most often the simulation exercises of assessment centres take the form of a battery of several simulations that include an individual problem analysis exercise and interview, an employee discussion exercise, an in-basket exercise that usually involves task direction and scheduling abilities to be demonstrated by the assessee, and a leaderless group discussion exercise. Jaffee et al. (1985, p. 584) have reported that leaderless group discussions usually take one of two forms, either cooperative or competitive. Each exercise varies from one-half hour to two hours in length, so that the typical assessment centre is a two- to three-day process that allows for comprehensive candidate feedback on the final day of the assessment.

The final day of feedback and debriefing of the candidates is considered by most practitioners to be as important as any other phase of the assessment centre process. The feedback sessions provided to the candidate by the assessment team members or assessment coordinator provide the candidates with detailed understandings and insights into their strengths, interpersonal styles, problem-solving abilities, and developmental requirements. In addition to the specification of candidates' strength and weaknesses the assessment centre team and coordinator will, in the comprehensive assessment centre model, provide follow-up consultations to candidates in the design of an individual developmental program that is specific to both the needs of the candidates and the organization in which they are employed.

The Assessment Centre: Primary Purposes of Selection and Promotion

As noted by some researchers in the late 1980s, assessment centres needed to use a more integrated approach involving organizational and human resource development systems for the recognition and career development of management talent (Appelbaum, Kay, & Shapiro, 1989). Indeed, in Europe some companies were involved in just such a project, integrating the assessment centre methodology primarily for selection purposes (Blanksby & Iles, 1990).

Even in the best circumstances, selection of employees is an uncertain process. No test can measure perfectly a person's abilities, skills, and intelligence, and no test comes close to measuring a person's enduring desire and motivation over time. Today there is a very great need for reliable and valid selection procedures since litigation is often a possibility. A greater concern, however, should be that of obtaining the most qualified employees possible to improve on the organization's opportunities for growth and success.

Since the traditional interview has low reliability and validity, personnel managers should consider other options. Some alternatives that even the smallest business could implement are the work sample, assessment centre, employment trial, and published tests (Aaron & Shore, 1990). Other areas in the United States have reported the merits of using an assessment centre as a selection tool (Nosin, 1988). Use of the assessment centre is a growing trend in different areas of the United States as a selection method for the new educational administrators (Pashiardis, 1993). Also, Anderson and Shackleton (1990) reported that

by the late 1980s many advances had been made in personnel selection by occupational/industrial psychologists in the United States, Canada, and Europe, particularly with the use of assessment centres as selection instruments.

One such study conducted by Nosin (1988) investigated candidates for promotion in fire and police departments in the U.S. using personnel records evaluations (PREs), seven assessment centres, and supervisors' evaluations. Results of PREs and assessment centre evaluations were compared to determine if PREs improved the predictive power of assessment centres. Supervisors' evaluations of subjects' management potential were collected for comparative purposes. Lowry (1994a) also used PREs in his research and found that both assessment centres and PREs were valid predictors of management potential. Previous research has concurred with the finding that assessment centres can be valid predictors of job performance in both selection and promotion applications (e.g., Randall, 1990; Coaley, Knightley and Beard 1993: " 'Front line' staff...", 1993; "Assessment centres help...", 1993).

Another important piece of research occurred in the annual Employee Development Bulletin Survey that presented findings of 151 United Kingdom employers' actual and anticipated recruitment in 1992 and 1993. This research included data such as starting salaries, progression prospects, and changes that they have been making to their recruitment and selection procedures. Almost a third of the United Kingdom employers surveyed have made changes to their recruitment

and selection procedures, including reduced advertising, computerized administration, and increased use of testing and assessment centres.

In other human resource research in the U.S., Campbell and Bray (1993) examined an application of assessment centre procedures for the selection of first-level managers from the trades personnel ranks. An evaluation study indicated that the assessment centre program had a positive effect on performance of managers at the first level and the pool of potential candidates for higher levels of management. The difference in the results for performance and potential suggested that the management skills measured at the assessment centre are more important in higher levels of supervision. Promotion of individuals who had never been assessed led to satisfactory results in terms of performance at the first level, but only a small percentage of this group had potential to advance to higher levels of management.

With the multitude of research conducted during the most recent five years in the area of assessment centres, much can be said for the advancement of the methodology. Many researchers have attempted to dispute the solid reputation of the methodology, attacking its validity, reliability, and attempting to expose its biases, and shortcomings in many different areas. However, much of the research indicates that many industries in many countries are currently using the assessment centre in many different applications. It is therefore reasonable to predict that increased future use of the assessment centre as an instrument to determine job performance and management potential will continue. Modifications to the methodology are suggested by much of the recent literature. Rating errors and biases on numerous fronts

are clearly demonstrated by the literature and should be addressed further. Few viable alternatives to the assessment centre have been introduced in recent years. Clearly, the future of the assessment centre at this point seems to be relatively secure.

Use of Assessment Centres in Education

Teacher candidates were traditionally selected based on cognitive measures such as intelligence tests and other considerations such as grade point average. Some of the current literature relevant to teacher selection points to the use of the assessment centre method as a valid and useful tool in the selection of effective teachers (Sheckman, 1992a). Also, according to Sheckman, the ideal qualities and attributes found in teachers closely mirror those of effective managers. Sheckman and Sansbury (1989) used teacher education candidates in a validation study which employed group assessment procedures, very similar to the assessment centre method. These same authors proposed that since personality factors are required to be assessed in teacher selection, the assessment centre method should be studied and its predictive ability examined. The researchers found that the predictors used in the study were valid when used in selecting teachers. Sheckman (1992a) also examined the contribution of a four-dimensional group assessment process of the prediction of initial teaching success. Results of that study indicated high validity of the revised group assessment procedure in predicting teachers' initial success.

The predictive power of a streamlined group assessment procedure (derived from the assessment centre method) for evaluating candidates for a teacher education program was again investigated by

Shectman (1992b). The study sample consisted of 231 Israeli students who graduated from a teachers college during the period between 1983 and 1988. The study attempted to predict the success potentials of teachers using a group assessment method where individuals were rated using multiple criteria, multiple dimensions, and multiple raters. Critical skills areas included oral communications, leadership abilities, and human interaction skills. The measurements of these areas were then correlated with principals' evaluation of the teachers' success some years later. The study found that the two sets of measurements were highly correlated.

The assessment centre exercises used in the Shectman (1992b) study included a non-directive group introduction, a directed group interview, a leaderless group discussion, and a session in which individuals provided feedback to other candidates in the study as well as to the assessors. The assessors used a typical assessment centre method in rating candidates on structured rating forms which included definitions of dimensions. Shectman demonstrated the meaningful and long-term predictive validity of the assessment centre method using group assessment procedures.

Another trend in education is the use of assessment centres in the selection of education administrators. Pashiardis' (1993) study, focused on school administrators, found there was a definite need to discover what factors are most important in predicting performance for future principals. Different selection methods are currently in use in the U.S. such as the National Association of Secondary School Principals program (NASSP) at Reston, Virginia, and the assessment centre for

public school administration at the University of Texas, Austin, which is gaining national prominence.

Allison (1989) reported that since the NASSP introduction into Canada in 1985 at the University of Western Ontario and the Ontario Institute for Studies in Education, the assessment centre approach has been positively received by school system administrators. Allison also recognized that the assessment centre method has applicability to educational administration. The assessment centre method, however, has had little impact to date in Canadian education because of both its limited availability and the accessibility by system administrators to this centre.

Hemphill, Griffiths, and Frederiksen (1962) described how the University Council for Education Administration at University Park, Pennsylvania, was the first organization to work on exercises, case study projects, and simulations specific to the needs of education administrators. These authors indicated that such an initiative should have led to the development of widespread university-based assessment centres. The NASSP at the time was far more proactive and assumed national leadership in this endeavour.

The NASSP approach to the assessment centre method shares a great deal in common with assessment centres operating in business programs, governments, and large international corporations. Allison (1989) also reported that the NASSP model had evolved to include assessment procedures for measuring 12 behavioral dimensions: (a) administrative skills of problem analysis, organizational ability, judgment, and decisiveness; (b) interpersonal skills of leadership,

sensitivity, and stress tolerance; (c) communication skills, both oral and written; and, (d) the miscellaneous factors of range of interests, personal motivation, and educational values. Allison concluded that although the potential of assessment centres for positive contribution to educational administration holds great promise, more work still must be done to establish greater predictive power of this method.

Much of the literature involving the relationship between the assessment centre method and educational applications has also been centred around developmental issues and the student/applicant, particularly in graduate-business schools. Topics here include career development, experiential learning, managerial competencies, and interviewing skills.

One such approach was reported by Rea, Rea, and Moomaw (1990) at Baldwin-Wallace College in Ohio. An assessment centre had been created to help students develop skills in management and career planning. To allow participants to learn more about their career interests and management skills, the Myers-Briggs Type Indicator was administered and interpreted after the exercises had been completed. Other researchers confirmed this element of development given to assessees after undergoing an assessment centre experience (e.g., Pickard 1990, Margerison 1992, and Thatcher 1993).

In another learning-oriented approach, Cigler (1990) presented an integrated approach to written and oral assignments throughout a Master of Public Administration (MPA) curriculum. Starting with the program orientation and the initial course in the MPA program, a series of written assignments that blended theory and practice was used as the

basis for later advanced work and special projects. One key to the implementation of this model included an assessment centre for developing interviewing and other skills. Dalziel, McDougall, Barclay, and Nimmo (1993) argued that introducing development centres into management education could provide students with an excellent model of experiential learning, with such centres having their roots in the assessment centre process. Other researchers have also promoted the assessment centre with graduate programs (e.g., Bartz & Calabrese, 1991; McMahon, 1992; and Steuer, 1992).

Graduate business schools were also examined by Bartz and Calabrese (1991) who found that during the 1980s a great deal of attention was directed toward the need for managers and executives to be more effectively prepared for their roles and responsibilities. Graduate schools of business were identified as one source that needed to improve, because a business degree program is an important part of the preparation of managers and executives. In addition to reviewing the content, graduate schools of business had to make improvements in content delivery style. Specifically, graduate schools of business needed to incorporate successful methods used in private and governmental organizations to train and develop managers. Such methods include role play, case method, in-basket technique, and the establishment of complete assessment centres.

In the opinion of Harrison and Stuart (1993), graduate schools of business need to incorporate successful methods including role play, case method, in-basket techniques, games, computer-based training, learning contracts, assessment centres, shadowing, structured self-

assessment, and mentoring. The authors reported on The Centre for Executive Development at the Ulster Business School which had been commissioned to develop an assessment centre targeted at senior management of small- to medium-sized companies within Northern Ireland. The assessment centre was to be based upon the development of a generalizable framework of managerial competencies which had to be comparatively simple to understand and had perceived relevance and applicability to that senior management population. Durkan, Harrison, Lindsay, and Thompson (1993) also reported on the centre, citing that a key element in this program has been the design of an assessment centre to provide a developmental focus for participants by giving them documented feedback on their performance in a range of critical management job activities that indicates both areas of strength and areas for further development.

The Move Toward the "Development Centre"

Goodge (1991) provided a succinct description of the move toward "development centres." A development centre, according to Goodge, is an off-site process resulting in effective development action. He cited three processes that are essential components of a development centre: (a) assessment or self-understanding, (b) career counseling, and (c) development planning. The best exercises used in centres are those described as task-based, that is, they use actual parts of the target job or jobs as exercises. The single most important factor according to Goodge is how feedback is provided to participants. An effectively managed development centre will be a model of clarity, organization, and

thoroughness and will expose the absence of these things in an organization, and even within its own organization.

Development centres are highly structured, process-focused workshops that measure the abilities of participants against the agreed success criteria for a job or role. There is often some confusion about the difference between development and assessment centres, leading to concerns about the use of the former. The main similarities are seen in the principles of assessment since both activities are designed to measure the abilities of those who take part. The main differences involve purpose, outcomes, and process. The development centre typically utilizes diagnostic instruments that identify precise development needs by revealing a gap between the current abilities of participants and the standard of performance required in a particular job. This gap needs to be closed by providing some additional activity such as coaching, development, or training. In most cases, the programs are prompted by a feeling that a workplace problem exists, that the performance gap is wide, that it needs to be quantified, and that remedial action needs to be carefully targeted (Lee & Beard, 1994).

Ford (1993) reported that there has been a proliferation of training courses designed to introduce the skills of work-based assessment to the uninitiated in the United Kingdom. This has resulted from the recognition that the workplace is the most significant location for any decisions concerning a candidate's competence within vocational qualifications.

Goodge (1994) described the design of a development centre as consisting of the processes by which assessments of competencies are

collected and used, the exercise type, what happens on and after the event, and the responsibilities given to assessors and participants. More than 70% of the 150 British companies that responded to a survey in late 1993 concerning the use of development centres said that they were running such centres (Griffiths & Goodge, 1994). The figure differs sharply from studies that identified only 7% of United Kingdom organizations using centres in 1973 and 19% in 1984. If centres are being used more frequently, their range of applications is also on the increase. A wide-ranging survey was conducted on the purpose, content, and procedures used by large United Kingdom organizations in running their assessment and development centres (Wood, Boyle, & Fullerton, 1994). Among large private sector firms, nearly 80% indicated some degree of use of assessment centres as part of their human resource development and management strategies.

A focus directed toward the idea of a development centre versus an assessment centre was also cited in the literature (Constable, 1993). What is often clearly evident in an assessment centre is a hiatus or gap that can leave participants feeling directionless and not knowing how and where to focus their energies after they receive their final ratings. In recent years, there has been a change in the language used to describe the process. The term "development centre" shifts the focus toward the future and is less threatening to participants than is the term "assessment centre." One framework for the future learning and development of participants who have been through the process is the self-managed learning approach.

Guerrier and Riley (1992) focused on the fact that although the assessment centre technology was originally developed in order to select among applicants for management jobs and to assess long-term potential, an emphasis on the diagnosis of participant training and development needs was required. The use of an assessment centre communicates that the organization is concerned about management skills and had definite preferences about management style. Blanksby and Iles (1990) reported that more recent uses of assessment centres in the United Kingdom have been for development purposes, using highly participative rating procedures.

Assessment/Development Centres and Organizational Change

With the magnitude and rapid pace of change that organizations have faced during the 1980s and early 1990s, many have chosen to implement the assessment centre process as part of their overall change management strategy. In 1987, British Telecom Management College established a core program of management training (Beard & Lee, 1990). As part of this activity, a career development group was set up to manage and coordinate the design and implementation of development centres. Used selectively as tools for identifying the training needs of strategically important groups of managers, the development centres have been an unequivocal success. Another development centre is the international management consulting corporation, Arthur Andersen's Centre for Professional Education, located at St. Charles, Illinois, just outside Chicago. It is the firm's cultural mecca and the worldwide focus for its training activities (Boreham, 1993). Much of the approach here contains elements of the traditional assessment centre. Clarke (1993)

stated that the United Kingdom government has a vision of a super race of motivated beings who, committed to driving their own lifelong learning process, devote their combination of energy and high-level skills to making Britain great again. This is the overt reason for the huge number of changes in structure and the range of new training initiatives occurring in the United Kingdom recently, including the Employment Service, careers services, and independent assessment centres all offering varying degrees of guidance and advice regarding further and higher education courses.

Knightley (1992), when relating change management strategy to the assessment centre methodology, cited a major division in British Telecom that had decided to sponsor the production of a development centre to handle large-scale redeployment, which was expected to arise from a program of change to its structure, function, and location. The Redeployment Development Centre had two aims: (a) to measure, profile, and feed back participants' specific competencies to assist focused development planning, and (b) to provide participants' business units with performance data to support sound redeployment decisions. Novotel's senior administrators settled on a 3-phase improvement plan, which began with the launch of a new logo in October 1993, followed by a £5 billion worldwide refurbishment (Littlefield, 1995).

Novotel's new development program has a focus on customer service. The company sees its customer-focus drive as a return to founding principles which were in danger of being forgotten as hotel numbers grew to nearly 300 in 44 countries. A staff development program called *School of Life* started in 1994 with management

assessment centres, and continued throughout 1995 with self-evaluation and multi-skilling units for other staff. Participants in Novotel's program were given both written and oral exercises, including an in-basket, role-play interviews with a demanding boss, an angry client, and a poor-performing member of staff.

The establishment of assessment centres during the reorganization of the National Grid Company (NGC) in the UK after privatization, is another example (Winter, 1995). Centralized assessment centres were used in NGC for a period of three years to bring about organizational change and development. They had critics but, on balance, were successful.

Recent Innovations and Non-Traditional Applications of Assessment Centres

Much of the recent research has focused around application of the assessment centre method in various, oftentimes new and innovative, situations. In a non-traditional application of the assessment centre method, Pultz-Osterlow and Schroiff (1989) conducted a study that described the utility of complex behavioral measures, particularly problem-solving procedures, as a supplement to a paper-and-pencil intelligence tests in the assessment of giftedness. Such assessment procedures included the assessment centre approach used in the selection of managerial staff and computer-simulated systems that evaluate complex reasoning and decision strategies.

In another non-traditional approach, Berkay (1993) conducted research using some elements of the assessment centre to develop exercises for deaf candidates. Berkay proposed a model for adapting

employment assessment centre group exercises for deaf job candidates. He described how a Fortune 500 corporation authorized the formation of an exercise adaptation team with deaf professionals and deaf employees. As a result of this research, several adaptations were made, including the use of laptop computers for assessor note taking, translation of exercise instructions into American Sign Language, and placement of deaf candidates into separate exercises that excluded hearing candidates.

Another interesting application described by McDonald (1993) was directed towards the assimilation of expatriate managers. McDonald stated that the failure rate of expatriate managers in overseas multinational operations during 1965-1985 has been estimated to have fluctuated between 25% and 40%. A battery of instruments, coupled with interviews and assessment centre evaluation, can be utilized in order better to predict the likelihood of a successful placement.

In a study that had a similar focus, Cook and Herche (1992) supported an international application where the assessment centre served as a tool for managing a global sales force. In a joint venture, multicultural sales teams and support staffs, which occasionally result from such "blended" firms, could make good use of assessment centres as a common denominator of evaluation procedures. The authors stated that the assessment centre in this application was perhaps its greatest contribution to the practice of sales management in the international realm.

A different research thrust was used by Whitney, Sagrestano, and Maslach (1994) who examined an assessment centre research project which studied relations between individuation, the willingness to publicly differentiate oneself from others, and three dimensions that might lead to high social impact: creativity, leadership, and nonverbal expressiveness. After the development of a Q-sort prototype of the high individuator, the prototype measure was used to examine the behavioral expression of individuation within the context of a combined managerial and personality assessment centre. Whitney et al. found that high individutors engaged in more creativity, leadership, and nonverbal expressiveness; they were more willing to express dissenting opinions; and they contributed more to group discussion task than did low individutors.

Also, Mumford, Gessner, Connelly, O'Conner, et al. (1993) assessed the role of personality and situational influences on destructive interpersonal and organizational decisions. One hundred and fifty-two management majors participating in a regional sales manager assessment centre were asked to complete a battery of personality and ability measures. Additionally, subjects were asked to complete a 32-item "in-basket," with eight items reflecting decisions that would harm others and eight items reflecting decisions that would harm the organization. Systematic manipulations were made in the in-basket content to manipulate authority norms, feelings of self-efficacy, and psychological distance. Destructive subjects tended to make decisions that harmed the organization when self-efficacy was low. However, they

would not necessarily make decisions that harmed others unless actions of this sort were supported by authority.

An additional technique reported by Fisher (1992) was a hiring method to be used in conjunction with a traditional assessment centre approach for selection. The hiring technique is called video assessment and presents management candidates with various scenarios and options for problem resolution. Video tests can give employers a quick scan of how job candidates react to real-life problems, according to Fisher. An additional benefit is for job candidates in providing a realistic preview of the trials and pressures they will face in a new job.

The Uses and Advantages of Assessment Centres

The credibility that has emerged internationally around the use of assessment centres has been based on successful demonstrations of their validity, the legal defensibility as to their objective, and job-specific performance potential gauges and their overall usefulness to organizations that are concerned with the best fit between administrator and administrative position.

The first carefully researched studies on the criterion-oriented validity of the assessment centre were conducted by AT&T in 1956. Bray and Grant (1966), as mentioned previously, reported that this study at AT&T demonstrated a high correlation between confidential assessment centre ratings and promotion within the organization over a 10-year follow-up period. Moses (1973) conducted a later study at AT&T that clearly predicted advancement beyond first-level management. A great deal of research has continued to support the criterion-oriented validity of the assessment centre process. These include research efforts

conducted by Wollowick and McNamara (1969) at IBM; Finley (1970) at Standard Oil of Ohio; Bentz (1971) at Sears; Fleisch and Leydon (1989) at Pratt and Whitney; and Leim and Slivinski (1972) and McLoskey et al. (1980), at the Government of Canada. A composite analysis of assessment centres based on the research evidence available to date pertaining to legal defensibility, validity, and usefulness to organizations as pertains to the discernment of job specific employee abilities and potentials is highly supportive.

The fundamental value of the assessment centre process to organizations is the specification of strength, weaknesses, and requirements for development of the assessee participants. Assessment centres, when designed for specific job relatedness, can be used not only for determination of appropriate potential of existing organizational personnel but also as an instrument of recruitment to these same levels of positions. Jaffee et al. (1985, p. 587) reported that the advantages the use of assessment centres had in recruitment practices were not only more accurate selection but also the favorable impressions that were created among candidates. Slivinski et al. (1977) had reported these same advantages much earlier in a national study of federal government employees in Canada.

The assessment centre method can be used not only in the process of recruiting new employees but can also be used to evaluate and identify management potential of recently hired employees. Developmental activities, career counselling, and planning may include establishing a training and job placement rotation schedule. Such a placement and rotation schedule can be often customized to meet both

the employee and organizational needs. This customized placement and rotation schedule can be established as part of a corporate human resource development system, as a product outcome of the assessment centre. The consequence of such an outcome is not only a better prepared candidate for promotion but also a far more sophisticated, job-related, and astute scheme of promotion for the organizations that are effectively utilizing the assessment centre method. Over time, therefore, such a strategy assists in the establishment of a more competent and better prepared cadre of individuals for promotion, and as a consequence of this, an evolution over time to a more competent and better prepared senior management and executive core if the assessment continues to be used effectively and as designed.

McLoskey, Slivinski, and Bourgeois (1980, p. 48) and Dodd (1977) described considerable candidate satisfaction with the assessment centre experience in terms of both (a) better understanding of self and (b) achieving a much better understanding of the objective format and procedures within the Canadian Career Assignment Program. Jaffee et al. (1985, p. 589) also reported the advantages of assessment centres for employee morale. The existence of well-managed and properly functioning assessment centres can provide clear messages throughout an enterprise concerning issues of organizational commitment to resources for evaluation, training, development and promotion based on improved objectivity measures concerning employee performance and potentials. The existence of such a sub-organizational infrastructure provides resources to staff for self improvement and access to opportunities which also tend to improve employee morale.

Assessment centres can also be used to better integrate corporate organizational development. Thornton and Byham (1982, p. 343) summarized the organizational development impact of assessment centres. Such ancillary, if not direct, impacts of assessment centres on organizational development included the overall evaluation of strengths and weaknesses of specific positions, branches, and divisions. Other ancillary benefits include the intertwining with historical performance review validation and processes; improving both employment equity; and providing guidance concerning the adequacy of employment counselling, staff development, and training programs for the future. All of these can be positive organization development outcomes of a competently designed and implemented assessment centre.

The future of the assessment centre method of management evaluation and selection seems to be promising (Munchus & McArthur, 1991). Newton (1994) argued that assessment centres represent one of the most advanced technologies of personnel psychology. Researchers have reported that private sector corporations that have used assessment centres extensively include J.C. Penney, Standard Oil of Ohio, United Technologies, and IBM (e.g., Hendricks & Ogborn, 1990; Kirksey and Zawacki, 1994). Blaney, Hobson, Meade, and Scordro (1993) wrote that the assessment centre helps unit directors critique their own managerial strengths and weaknesses and formulate effective self-improvement plans and growth strategies. The objective, job-related framework elicits responses which enable participants to evaluate their skills and potential and enhance the productivity of the managerial team.

Similarly, Leatherman (1990) reported the need for executives to manage differently by using more effectively such management tools as assessment centres, surveys, interviews, tests, and past performance appraisals to make better leadership assessment decisions. One caution Leatherman stated was the paradox that only large organizations can afford to run and staff an assessment centre. Rowe's (1994) research suggested that managers place considerable store by assessment centres and psychometric tests because they are anxious to choose the best corporate leaders. Managers, however, should not overstate the value and objectivity of these tests. These tests are often a convenient fall back for managers, allowing them to confirm or reject personal prejudices.

Rudner (1994) reported that the effectiveness of pre-employment testing is a function of three factors: (a) the correlation between test scores and job productivity; (b) the percentage of applicants being hired; and (c) the proportion of applicants classified as successful by a test. Employers should investigate and use alternatives to conventional tests, such as assessment centres. Other researchers in the literature are also proponents of the assessment centre method (e.g., Smith, 1990; Sanniti et al. 1990).

Nesbitt (1992) reviewed the recent literature on assessment centre methods with a view to evaluating the process used in the selection of Australian Antarctic Station Leaders (ASLs). The literature is reviewed in terms of history, validity, comparisons with other forms of assessment, and factors that affect assessment centre validity. Several suggestions were made with respect to improving the efficiency of the

process for selecting ASLs. Results of the literature review revealed that the assessment centre is the most reliable and valid measure of identifying managerial and leadership potential.

Concerns and Criticisms of Assessment Centres

The extent to which organizations can derive benefit from an assessment centre is highly dependent on the nature, particular needs, and size of an organization. Assessment centres have been demonstrated to provide considerable cost benefit to larger organizations (Leatherman, 1990). However, assessment centres are expensive, not so much in direct costs but rather in the indirect costs of the organizational administrative infrastructure that is required to support them on a continuing basis. Highly competent managers, senior managers, executives of the existing enterprise as well as directly responsible professional specialists are usually involved in the functioning of the assessment centre. Such indirect costs of the involvement of existing senior managers and executives, even if on a part-time basis, can amount to significant resource commitment within an organization. Decision makers, therefore, must consider the overall ratio costs to benefits of establishing an assessment centre especially when the executives of the enterprise feel (rightly or wrongly) that the organization is already doing an adequate job with respect to the service and support functions to be covered by the assessment centre.

Assessment centres are more likely to be established in larger organizations because of advantage of the economies of scale along with comparatively more limited resource displacement. Smaller organizations are more restricted in instituting an assessment centre

due to limits of resources, more limited samples for validity research in establishing criterion data and having little, if any, infrastructure of competent professionals to staff the program. Byham (1977), however, did survey and list advantages to small firms in utilizing or accessing the assessment centre method of other existing organizations. The list of advantages to smaller organizations related mainly to issues of reduced cost and flexibility of access when prevailing upon established assessment centres of other like organizations.

Duggan (1993) argued the cost issue of utilizing the methodology, citing that although the assessment centres have long been considered the most valid recruitment procedure available, they are not universally used in industry due to their relative cost. Rather than simply conducting a cost-benefit analysis of the financial outlay involved in assessment procedures, it is necessary to look at the "total picture."

Payne, Anderson, and Smith (1992) considered the cost effectiveness of assessment centres in terms of predictive power, utility, and financial benefit. Data from an assessment centre designed and run by the Occupational Psychology Unit of Ford Motor Company were collected. Ford had developed a program to sponsor students through university and polytechnic engineering degree courses with a view to eventual recruitment. An assessment centre was designed to maximize the accuracy of selection decisions. Four competency dimensions needed for satisfactory job performance were identified: (a) business awareness, (b) interactive awareness, (c) work structure, and, (d) drive and enthusiasm. A statistical technique called discriminant function analysis was used to determine how accurately the assessment centre

decisions could be predicted purely on the basis of test scores. The results indicated that the assessment centre was not being used cost-effectively at Ford Motor Company.

The establishment of an assessment centre in an organization is often perceived as threatening the traditional power of senior management and the capacities of the executive to anoint senior managers with career decisions that reinforce their own power base. The acceptance and successful functioning of an assessment centre requires that the executive and senior management group be involved throughout the three steps of the process – design, implementation, and evaluation.

Boche (1973) reported that an assessment centre is more likely to be accepted when key decision makers are not familiar with the existing talent pool in their organization. Similarly, rapid growth of an organization requiring competent new managers and dissatisfaction of the executive concerning the existing management pool are documented in the literature as reducing organizational concerns regarding the establishment of assessment centres.

Related to this concern is how organizational management will accept an assessment program. Boche (1977, p. 244) reported on the high face validity that typically exists with the assessment centre process, that is, the degree to which the process appears to be fair and accurate to those members of organizations either involved in or observing the method. Kraut (1972) and McLoskey et al. (1980, p. 49) both described the support for the process that existed in management and assessee populations.

Some of the research literature concerning assessment centres has been less than positive. Although many of the problems that have been associated with assessment centres in some studies can be blamed on poor program research, design, or administration, nonetheless it is important to consider some of the disadvantages inherent in the assessment centre method as articulated in the most critical research.

Ross (1979) raised serious concerns about the appropriateness, reliability, and validity of assessment centres in the research which he surveyed. Klimoski and Strickland (1977) reviewed 90 studies and concluded that the evidence for assessment centre validity of results was not impressive. Nosin (1988, p.10) also pointed out in his review of the negative aspects of the method that some of the research on assessment centres lacked replication and that the research rigor of such studies was also often questionable.

In other research which criticized the assessment centre method, Allison (1989) reported that studies of the predictive validity of assessment centres when not kept confidential from organizational decision makers undermined the whole intention of the process. Within this same realm of criticism, Howard (1974) earlier reported that the assessment centre ratings of candidates, if not kept fully confidential, might well exert some influence on promotability and therefore establish either a self-fulfilling prophecy or halo effect. Allison (1989, p. 5) referred to this problem as "criterion contamination" in his criticisms of the NASSP assessment centre model.

Another potentially serious criticism of assessment centres is the lack of content validity. In order to ensure that the content validity of

an assessment centre is properly achieved, the program design and resultant simulations must relate directly to quality of the effort in the job, task, and competency analysis research that has been considered and incorporated in the simulations and selection procedures. The issue of content validity has been the focus of the legal challenges to assessment centres in the United States. To date, the assessment centre method has withstood these challenges successfully. The issue has yet to be addressed in the Canadian courts.

A considerable amount of the most recent research, such as that conducted by Jacobs (1989), Keel et al. (1989), Anderson and Shackleton (1988), Chadwick (1988), Rayner and Goodge (1988), Feltham (1988), Goodge (1988), Laser (1988), and the meta-analysis work on assessment centre validity by Gaugler et al. (1987), has contributed considerably to the credibility and acceptance of the assessment centre method. As an answer to earlier critical research, more empirical validation of the methodology used in assessment centres as well as high quality longitudinal data, have been published more recently.

As an alternative to the assessment centre, Lowry (1994b) presented a discussion of how to improve the validity and reliability of structured interviews. Lowry exhibited a framework, based on the foundations laid by various researchers, as well as the guidelines for assessment centres. The proposed framework was used to structure an interview used in a selection test. The three primary differences between the procedures used in Lowry's structured interview approach and those most commonly used in organizations are as follows: (a) the inclusion of relatively complex situation simulation; (b) the use of a role

player; and, (c) the use of an integrating procedure at the end of each phase. The results suggest that this kind of interview may be a valid and less costly alternative to the assessment centre.

Another researcher, Gledhill (1992), argued for discarding the traditional assessment centre altogether. In the United Kingdom, police officers undergo modular training during which they are assessed in 36 skill-ability areas before being cleared as competent to patrol alone. A case can be made for abandoning artificial assessment centres and replacing them with real-life situations. The trainee can observe several incidents both inside and outside the police station and reflect on them with a tutor to deepen understanding of the components that make up an organization and its culture.

Both the critics and proponents (who are in the now considerable majority) of assessment centres agree that the method is not a panacea. In spite of the financial commitment required by organizations, the personal and professional risks to candidates, the complexity of the process, and the criticisms by a minority of researchers, the assessment method is emerging as the most validated, objective and legally defensible personnel selection and management development technology.

The Assessment Centre Key Players: Assessors and Candidates

Assessors and candidates have long been a topic of interest for researchers and practitioners of the assessment centre method. Not surprisingly, some of the more intriguing literature during the early 1990s had explored assessors and candidates, their interrelationships, and their behaviors and reactions. From the earliest research in the

area, issues such as how these individuals in each role behave under certain conditions, how their ratings are made, influenced, and combined, how they influence each other, and how they are trained have been explored.

MacKinnon (1975) described the process of measurement within the assessment centre to consist of a comparative group gestalt on a number of performance and behavioral dimensions as described by a number of trained assessors. Reliability of the process has been very often reported (Dicken & Black, 1965; Greenwood & McNamara, 1967; Schmitt et al., 1990; Thomson, 1970) as interrater reliability. Cohen (1980a) suggested that the measures of reliability which are considerations for the assessment centre are most important of high predictive validity. If such measures of reliability are not considerations in the design of the assessment centre, the result may be poorly run programs of questionable predictive capacities.

Unreliable measurement may be due to instability, inconsistency, and subjectivity of judgments. This issue of reliability therefore as it relates specifically to the assessment centre is dependent upon assessment – reassessment stability, simulation consistency, the quality of members of the assessment team, and their objectivity.

With respect to the issue of assessor ratings, how these assessor ratings are affected by different elements present during the assessment centre process has been recently researched. Gaugler and Thornton (1989) examined the accuracy of assessors ratings in a U.S. study where subjects were trained as assessors, and then evaluated the performance of confederates in an assessment centre simulation on three, six, or nine

dimensions. The number of dimensions affected some assessment centre judgments but not others. Subjects who rated a small number of dimensions classified behaviors more accurately and made more accurate ratings than did subjects who rated a large number of dimensions. Number of dimensions did not affect the accuracy of the assessors' observations nor the discriminant validity of their dimension ratings. The authors suggested that developers of assessment centres should limit the cognitive demands placed on the assessors by, for example, minimizing the number of dimensions assessors are required to process. Certainly a trade-off must be made in light of this investigation between the number of dimensions required to assess candidates for a particular position and the demands placed on the assessors and their resulting ratings.

How assessors reach final conclusions during an assessment centre has historically taken the form of some sort of agreement process where individual assessor ratings are combined to arrive at dimensional ratings, as well as overall ratings. Lowry (1992) conducted a field experiment to investigate two different consensus procedures in a career development assessment centre. Five participants were supervisors or middle management persons from a medium-sized local government organization. Twelve assessors rated the participants on five performance dimensions. The experimental group used a consensus procedure that did not allow evaluative discussions of behaviors or attribution of scores to assessors. The control group allowed both activities. Results showed important differences between the two groups of assessors in both scores and rankings of participants. Scores from the

experimental group showed no significant difference from independent ratings by supervisors on the same performance dimensions. This contrasted with the strongly significant differences shown by the control group. The results support previous findings that there is a need to standardize the consensus procedures.

In another U.S. study designed to understand assessor performance and candidate behavior, Gaugler and Rudolph (1992) examined assessors evaluating assessee's performances in one of three performance conditions in an assessment centre simulation: (a) a consistent performance condition; (b) a within-assessee performance variation condition; or (c) a between-assessee performance variation condition. For each assessee, the low target performance was rated lower when the assessee's prior performance had been dissimilar, or high, than when the assessee's prior performance had been similar. Contrast effects also influenced assessor's ratings of the target assessee when there was variation in performance among assessee's. For example, the low-performing target assessee was rated lower when the individual was evaluated with two high performers than when evaluated with two low performers.

Another project conducted by Lowry (1991) examined the inter-assessor influence in four assessment centres using scoring and evaluation procedures patterned after the Nominal Group Technique. Seventeen assessors determined scores for eighteen participants on five performance dimensions after each exercise and just prior to and during the consensus discussions. These scores were never attributed to the

assessor. According to Lowry, no significant inter-assessor influence was found in any of the centres.

Lowry (1993) later investigated the effects of nine characteristics of assessors on exercise scores in three police and six fire service assessment centres for local governments in the United States. Assessors included those who had and who did not have experience in the job under consideration, and who differed on several other characteristics including age, race, gender, previous assessment career experience, education, managerial experience, assessor managerial level, and tenure in that position. Age and the rank of the assessor were the only characteristics that had a significant effect on the scores; however, the magnitude of the effect was small (<2% of the variance was associated with these two factors). Results might be attributed to the process used to select the assessors, the way the centres were managed, and the type and intensity of assessor training.

Anderson et al. (1994) conducted a series of analyses in the U.K. to evaluate the decision-making strategies of assessors involved in a final-stage assessment centre. Thirty-eight assessors rated applicants for an engineering sponsorship placement. Applicants were evaluated on interactive awareness, work structure, drive and enthusiasm, and business awareness over three exercises. Two psychometric tests of cognitive ability were administered as well, one of numerical reasoning ability and one of verbal reasoning ability. Thus the assessors were provided with two types of information: their own observational ratings and psychometric test scores of the candidates. Analysis revealed that assessors perceived the observational and psychometric sources as

distinct and that assessors integrated information from each source somewhat differently. Further, Crawley, Pinder, and Herriot (1990) discussed the importance that assessors placed on personal attributes of candidates which permitted general competencies to be expressed in performance. The more intellectually oriented dimensions were related to general intellectual ability.

Another study presented qualitative results of experiences with employment testing of alternative selection procedures. Macan, Avedon, Paese, and Smith (1994) conducted a study examining manufacturing applicants' perceptions of two selection devices. In Study One, some 3,984 applicants completed cognitive ability tests and a survey of reactions. In Study Two, a subset of 194 applicants participated in an assessment centre and completed the survey. Applicants reacted favorably to the procedures but viewed the use of the assessment centre as more valid than the cognitive tests. Applicants who perceived the selection more favourably were also more satisfied with the selection process, the job, and the organization. Although applicants' perceptions of the procedures were related to job acceptance intentions, applicants' liking of the job and organization explained the largest unique variance.

Further work on candidates' perceptions was undertaken by Fletcher (1991) who investigated the effects of attending an assessment centre in the UK for potential business managers and of the assessment decision on 70 candidates. Measures of psychological well-being, need for achievement, organizational commitment, and job involvement were administered before, immediately after, and six months subsequent to attending the assessment centre. Data indicated that dominance and

pursuit of excellence increased immediately post-assessment but dropped back to their pre-assessment levels, while work ethic and competitiveness changed significantly in the opposite direction. Job involvement dropped markedly after six months. Unsuccessful subjects were scored lower than the successful subjects on work ethic, acquisitiveness, status aspiration, and mastery. Interaction effects indicated that the impact of the assessment outcomes was confined to self-esteem, competitiveness, and work ethic.

Fletcher and Kerslake (1992) reported on a longitudinal study of the effects of attending an assessment centre on candidates' self-assessments in a centre run by a major United Kingdom bank. The purpose of the centre was to identify management potential and development needs among 57 managerial candidates. Results showed that there were marked differences in self-assessment accuracy between successful and unsuccessful candidates immediately after the assessment centre, and they still persisted six months later. Unsuccessful candidates were reported to have misjudged the effectiveness of their performance. These findings stress the need for effective feedback procedures in order to assist both successful and unsuccessful assessment centre candidates.

In a later U.K. study, Fletcher and Kerslake (1993) examined the extent to which attending an assessment centre generates anxiety among candidates, and its effects on them. The results indicated that candidates experienced rather high levels of anxiety and that higher anxiety levels were associated with lower ratings given by assessors, though the candidates' post-assessment self-perceptions of ability tended

to be higher for those with higher anxiety. The nature of the anxiety reported appeared to be situation specific and to be akin to test anxiety and evaluation apprehension. To minimize anxiety effects in assessment centres, the British Civil Service Selection Board has a group exercise on the first two-day process that is not formally assessed.

Another study examined candidates' reactions after an assessment centre experience, which included self-assessment questionnaires in a post-assessment format. George and Smith (1990) examined the predictive validity of self-assessment in the selection of career staff for first-level managerial positions in relation to an assessment centre program. Self-assessments were compared with organizational evaluations of performance at selection and after 12 months of employment. Self-assessments requested after the assessment centre selection program were significantly lower than self-assessments requested before the program.

The literature presented above provides a comprehensive overview of the historic and international research conducted to date on the assessment centre method, its multiple uses, variations, organizational advantages, and deficiencies.

Critical Elements of the Assessment Centre:

Validity and Reliability

This section presents some of the most recent research literature concerning critical considerations pertaining to the validity and reliability of the assessment centre method. The most recent literature is also highlighted as it pertains to predictive and construct validity of

the assessment centre method as compared to other techniques for identification of skills and abilities in management selection.

Validity

By a large margin, the majority of the research from 1990 to 1995 in the area of assessment centres has been devoted to the validity and reliability of the methodology. One survey, conducted with a number of United Kingdom companies regarding their use and effectiveness of the Development Centre and the limited benefits of assessor training and the effects of size, was completed in 1994. Most of the difficulties with the centre were found to be related to follow-up and post-centre personal development. Longer centres, those lasting three or more days, tended to be associated with resourcing problems. Shorter centres tended to produce objectivity and measurement difficulties. Longer periods of assessor training reduced specific problems with objectivity and accuracy, but provided no other benefits (Goodge, 1994a).

Much of the more recent research has also been directed toward exploring candidate characteristics, such as age and sex, and how these variables affect the outcomes of an assessment centre. Morrow, McElroy, Stamper, and Wilson (1990) examined the variables of age, sex, and physical attractiveness of subjects and their effects on ratings. During the study, 40 personnel professionals evaluated eight candidates for a regional manager position, using simulated assessment centre data. A two-variable repeated-measures design was employed in which applicant attractiveness (high vs. low), sex of applicant (male vs. female), and age of applicant (less than vs. more than 40 years of age) were within-subject factors. Rater sex and rater age were analyzed

separately as between-subject factors. Physical attractiveness significantly affected the extent to which subjects would recommend a candidate for promotion and expect future success. These findings, however, were associated with only 2% of the variance in ratings; rater age was associated with 14-21% of the variance in three recommendation ratings.

Another study by Veir (1993) explored whether the current methods of admitting students into administration preparation programs are fair and equitable to female and minority candidates. A database was used from a department of educational administration, which employs an assessment centre methodology for screening students for admission to the leadership preparation program. A profile was developed of each candidate from the assessment centre data and the normal data gathered on the Graduate Record Examination (GRE) and grade point average of the student. The department used the recommendations and scores of the practicing administrators who participated in the assessment centre process to develop profile data for admission decisions. The data showed that standardized tests such as the GREs clearly favour "Anglo" students and that black females appeared to be placed at most disadvantage by this exam.

In another study which focused on gender-related concerns, Neubauer (1990) examined implicit theories pertaining to women as applicants for lower level managerial positions. The research involved a study of 54 women in a high school career assessment centre. Performance of females equalled or surpassed that of males. The assessment centre technique offered women a good chance that their

strengths would be recognized. A mixture of male and female observers in the assessment centre yielded promising results; being an observer can change implicit ability theories in favour of women over time.

Also, Shore (1992) investigated the effects of gender on evaluations of managerial potential within a corporate assessment centre program. In 1980-1985, 375 men and 61 women were assessed by primarily white males on their intellectual ability, performance and interpersonal skills, and overall management potential. Women were rated higher than men on the performance-style skills; however, there were no differences in overall management potential ratings or in actual long-term job advancement. The results suggested that subtle gender bias affects evaluations of managerial potential and subsequent promotion decisions.

Another sub-area of this type of research conducted recently focused on the ability of the assessment centre methodology to accurately predict job performance among candidates for both selection and promotion. Predictive validity is of course an area of major concern for researchers as well as for practitioners working with organizations. In one investigation, Ritchie (1994) examined the predictive validity of an assessment centre for senior level positions. He observed the extent to which advancement to senior management levels could be predicted from assessment centre results and whether people with different assessment profiles would have different probabilities of advancement within the organization. His study of 115 people who attended the AT&T Advanced Management Potential Assessment Program between 1982 and 1985 indicated that assessment centre ratings can be used to

identify people with senior management potential. Among all subjects, those who received ratings of excellent potential were more likely to advance to senior management positions than those seen as having less potential. Subjects with different assessment dimensions profiles had different chances for success.

Specific to the subject of recruitment of new employees, Lane (1992) cited the choice of assessment method as an important task facing the United Kingdom human resource specialist engaged in selection and development. While the researcher argues the unreliability of interviews, assessment centres are generally good predictors of future performance. In a meta-analysis of self-efficacy ratings and performance in assessment centres, an overall correlation of .40 was found.

Evidence to the converse is also present in the research. For example, Pynes and Bernardin (1989) researched the predictive validity for an assessment centre used to select entry level police recruits. Assessment centre ratings on 275 police recruits correlated .14 ($p < .05$) with training academy performance and .20 ($p < .05$) with on-the-job performance. Lower validity for this assessment centre compared with published meta-analytic validities on assessment centres was discussed in the context of several unique study characteristics: the police sample, difficulties in measuring police performance, number of scale points used in the assessment centre, and the relatively small number of exercises used in the centre. Using the same sample, a composite of two cognitive ability tests correlated .31 and .17 with training performance and job performance respectively. Strictly on the basis of the obtained

validities, their results did not support the use of assessment centres for police selection compared with cognitive ability tests.

Adler (1990) reported that the number of female police officers had increased in the United Kingdom, but the proportion of females in higher ranks had declined. Equal opportunity practices in some U.S. police departments contained lessons for British police forces and other organizations. Policewomen often were clustered in lower ranks in the United States, for these reasons: (a) women have not been policing in large numbers long enough to have reached the highest ranks; (b) promotion on seniority limits opportunities; and (c) supervisors' evaluations discriminate against women. Some approaches were cited by Adler that aim to eliminate discrimination in promotion: (a) efforts to ensure that written examinations are culturally unbiased and job related; (b) efforts to ensure that other criteria, such as seniority, education, evaluations, and military service, are eliminated or reduced in impact; (c) the use of assessment centre and promotional evaluations boards that provide similar assessment experiences, limit bias, and allow for multiple judgments; and (d) the training of selectors to ensure consistency and discrimination-free assessments and to enable mixed race and sex representatives from various sectors.

With regard to validity, Gaugler, Rosenthal, Thornton, and Bentson's (1987) meta-analysis of 50 assessment centre studies containing 107 validity coefficients revealed a corrected mean and variance of .37 and .017 respectively. Validities were sorted into five categories of criteria and four categories of assessment purpose. Higher validities were found in studies in which potential ratings were the

criterion, and lower validities were found in which promotional considerations were the focus of the studies. Sufficient variance remained after correcting for artifacts to justify searching for moderators. Validities were higher when the percentage of female assesseees was high, when several evaluation devices were used, when assessors were psychologists rather than managers, when peer evaluation was used, and when the study was methodologically sound.

Critical analyses of the utility of assessment centres, specifically situation-specific versus dimensional measurements of managerial abilities, were also researched. One of the key elements attributed to the assessment centre is its ability to evaluate candidates' knowledge, skills, and abilities across situations in dimensions such as oral communication skills and management control. Bycio Alvares, and Hahn (1987) reported on a series of confirmatory factor analyses which revealed that assessment centre ratings were largely (if not totally) situation specific, and that assessors failed to distinguish among the eight target abilities. These results combined with previous research suggest that the assessment centre method measures mainly situation-specific performance, not cross-situational managerial abilities. The researchers suggested that the intended constructs might be better measured if more ability-related behaviors were elicited with each exercise and if the cognitive demands placed on assessors were reduced.

A number of studies have been cited in the literature that purport to demonstrate the validity of the assessment centre method. For example, Cohen et al. (1974) analyzed 18 predictive validity studies and reported overall positive relationships between assessment centre

results and subsequent job performance by the rated participants. Similarly, other studies (Bray, 1976; Finkle, 1976; Huck & Bray, 1976; Jaffee & Cohen, 1980; Mitchell, 1975; Moses & Boehm, 1975) have demonstrated the positive relationship between assessment centre ratings and the future performance and management success.

The findings in the research literature generally support the validity of properly designed and rigorous assessment centres. The critical literature, however, does note the important fact that the Management Progress Study at AT&T and the study by Bray and Campbell (1968) seem to be the only research studies where total secrecy of the assessment centre results was maintained over an extended period of time by the assessment researchers. The fact of disclosure of the assessment centre ratings to the senior management of an organization may possibly result in criterion-contamination as suggested by Allison (1989), thus causing problems in interpreting validity. The realization of the possible weaknesses of the disclosure of results dilemma does not however invalidate the assessment centre method. Given this research issue, it is important to note that the plethora of supporting research concerning the predictive validity of the assessment centre method may not be so overwhelming as it initially appears.

The issue of research evidence is important, but, as suggested by Sackett (1982), predictive validity may not be the sole reason for choosing the assessment centre method over other management selection techniques. Broader acceptance of the assessment centre method occurs because of its foundation in specific job-related data, face validity, and improved objectivity over traditional single-method

approaches. McNutt (1979) described the most impressive contextual feature of the assessment centre method as being the greatly increased predictive validity of job performance when compared to traditional selection and promotional techniques. Sackett (1982) also suggested that the validity evidence for the assessment centre method is more consistent than it is for other methods for predicting performance.

Additional evidence of situation-specific performance was provided during this time period. Robertson, Gratton, and Sharpley (1987) researched the psychometric properties of four assessment centres in the United Kingdom and, in particular, the extent to which the ratings produced by assessors of 222 candidates demonstrated both convergent and discriminant validity. Results indicated that within-exercise ratings of different traits correlated more highly than across-exercise ratings of the same trait. Factor analyses of the data revealed that underlying factors represent exercises and not dimensions. Also, Schneider and Schmitt (1992) reported on a finding in assessment centre research that ratings cluster according to exercises and not dimensions. Seeking further understanding of exercise effects, the authors proposed two exercise-based factors (exercise form and exercise content) as sources of variance in assessment centre ratings. Exercise designs were manipulated so that two levels of form (leaderless group discussions and role-play exercises) were cross-tabulated with two levels of content (cooperative and competitive task designs). Analysis of variance (ANOVA) and confirmatory factor analysis procedures applied to multitrait-multimethod ratings of 89 high school students assesseees revealed that most of the variance in the ratings was explained by the

format of the exercises and not content dimensions. Exercise format accounted for 16% of method variance, whereas exercise content had near zero effect. The form effect was primarily due to higher correlations of dimension ratings across role-play exercises.

The question of whether behavior is consistent across diverse situations (cross-situationally consistent) or specific to these situations (cross-situationally specific) is as salient a concern today as it has been throughout the long history of research and debate. Research on the validity of rating has confirmed this concern (Hemmelgarn, James, Ladd, & Mitchell, 1995; Highhouse & Harris, 1993). Iles (1992) concluded that although the validity evidence for assessment centres is very impressive, centres often seem to predict promotion or salary progression, rather than other criteria of effectiveness such as job performance. A competency-based assessment and development approach may help in specifying individual behaviors by showing people what they need to know to be successful in the new culture.

In an examination of validity of ratings, Reilly, Henry, and Smither (1990) conducted a quasi-experimental design to investigate the influence of retranslated behavior checklists on the construct validity of dimension ratings. Assessor use of behavior checklists increased the average convergent validity (i.e., same dimension across exercise) while decreasing the average discriminant validity (i.e., different dimension within exercise). Behavior checklist sums were moderately correlated with corresponding dimension ratings and demonstrated a comparable level of construct validity. The results indicated that behavior checklists may improve dimension construct validity by reducing the cognitive

demands placed on raters. Shore, Thornton, and Shore (1990) examined the construct validity of assessment centre final dimension ratings (DRs) within a nomological network of cognitive and personality measures. Four hundred and forty-one employees were assessed on eleven dimensions in two categories and completed four tests of cognitive abilities. Results of the study showed that several cognitive ability measures related more strongly to performance style DRs than to interpersonal style DRs, providing evidence for convergent and discriminant validity. Correlation analysis and factor analyses support the two a priori interpersonal- and performance-style categories.

Shore, Shore, and Thornton (1992) subsequently conducted similar research wherein the construct validity of final self evaluations and peer evaluations in an assessment centre was examined within a nomological network of conceptually related and unrelated variables. Data included self, peer, and assessor evaluations; cognitive ability and personality measures; and job advancement. The evidence for construct validity was stronger for peer evaluations than for self evaluations and for more easily observable dimensions than for dimensions requiring greater inferential judgment. Self and peer evaluations were associated with assessor ratings of management potential, whereas only peer evaluations predicted job advancement.

Russell and Domm (1995) reported on two sets of constructs underlying assessment centre ratings. The trait explanation holds that dimensional ratings capture a candidate's personal characteristics, skills, and abilities. The performance consistency/role congruency explanation holds that dimensional ratings are predictions of how well

candidates will perform various tasks and roles in the target job. While past research had failed to find support for trait explanation, no studies have explicitly examined the validity of assessment centres designed to make task- or role-based dimensional ratings. Two field evaluations of this explanation are reported by Russell and Domm. In Study One, assessor training was modified to have assessors view traditional assessment dimensions as role requirements. Study Two evaluated the criterion-related validity of ratings on both job requirements and traits. Findings indicate that task-based ratings demonstrate concurrent validity in a sample of entry level managers while the traditional trait-based ratings do not.

In a similar study of assessment centre ratings, Schmitt, Schneider, and Cohen (1990) examined validity coefficients for a single assessment centre implemented in multiple locations in the United States. In this study 520 school administrators were assessed while they were either teachers or assistant principals. Criterion measures included ratings on 15 behaviorally anchored rating scales and an overall rating. Potential moderators were assessed by asking the assessment centre directors questions about how their centre operated, and how assessors were selected and trained. The overall results suggested that the placement recommendation derived from the assessment centre is a significant predictor of the job performance of school administrators as judged by their teachers, but not by their supervisors. Validity coefficients were highly variable across locations; this variability was not a function of sampling error variability in range restriction or criterion unreliability in this study.

In a different setting, Tziner, Ronen, and Hacoheh (1993) examined the ratings on 18 assessment dimensions formulated independently by 48 assessors, consensus ratings on the same dimensions, and overall assessment rating for 329 assesseees at an Israeli assessment centre. Of this total group, 274 of the assesseees were promoted based on their scores obtained in the assessment process. Ratings were obtained for 240 of these assesseees on two criterion measures over four years. These criterion data were provided by their supervisors who were unaware of the scores obtained in the assessment process. Multiple regression analyses demonstrated a long-term validity for the assessment centre. However, there was no consistent pattern of statistically significant differences between the predictive validities of high-level managers and psychologists as assessors.

In a later study, Tziner, Meir, Dahan, and Birati (1994) obtained final ratings on 25 assessment dimensions for 382 candidates for high-level management positions in an Israeli corporation. The ratings were determined by an assessment centre process, two clinically derived assessment scores, and a mechanically derived assessment score. For 49 of the assesseees, scores were also available on a battery of paper-and-pencil cognitive tests. For all subjects, data were obtained on two criterion measures over a period of four years. Both the general intelligence rating formulated in the assessment centre and the scores on the cognitive tests were found to be predictively invalid, while the personality measure proved valid. Despite the modest coefficients of predictive validity found for the other assessment centre predictors, the

economic utility analysis performed with an amended formula demonstrated a cost-effectiveness for the assessment centre program.

Pynes and Bernardin (1992) compared the validities of mechanically derived and consensus-derived assessment centre ratings. Assessment centre ratings on 110 police candidates were compiled from a multi-jurisdictional assessment centre in the southeastern United States. None of the predictor data were available to organizational decision-makers, making this a rare, uncontaminated predictive validity study. The results showed no significant differences between the two approaches for the prediction of on-the-job performance. No significant differences were found in the predictive validities on any of the dimensions. Adverse impact percentages were nearly identical between the two approaches.

Reliability

Research looking at three forms of reliability of exercise ratings in an assessment centre was completed in 1990 (Gatewood, Thornton, & Hennessey, 1990). The design incorporated 23 graduate students in four groups and 31 undergraduates, who participated in multiple leaderless group discussion (LGD) problems. Inter-rater reliability, as measured by intraclass correlations with an assessor group, ranged from .69 to .99. Intergroup reliability, as measured by correlations of consensus ratings between assessor groups that had observed identical LGD groups, was .66 to .84. Alternative form reliability, as measured by correlations of overall ratings by the same assessor of subjects in two different LGD problems, was .35 to .62. The low stability in ratings of the same participant in different LGD exercises implies that participants' exercise

score could be affected by the nature of the LGD problem and the characteristics of other participants.

In another type of study, Harris, Becker, and Smith (1993) examined the effect of two different assessment centre scoring methods on the cross-situational consistency of assessor ratings. A scoring method that focused on dimensions yielded similar heterotrait-monomethod and monotrait-heteromethod correlations compared with the more typical within-exercise procedure. As in previous research, dimension ratings correlated more highly with different dimensions in the same exercise than with ratings of the same dimension in other exercises.

In a related type of study, Crawley, Pinder, and Herriot (1990) researched the relationship between personality attributes and assessment centre dimensions. A sample of 274 accountants and supervisors at two managerial assessment centres completed personality inventories and aptitude tests, including the Myers-Briggs Type Indicator. Correlations between personality attributes and assessment dimensions were generally low. There was some support for the idea that personal attributes permit competencies in general to be expressed in performance. The more intellectually oriented dimensions were positively related to general intellectual ability.

Also, Kleinmann (1993) conducted an investigation concerning the extent to which participants recognize that rating dimensions in assessment centres have an effect on performance. Results showed that people who more accurately identify rating dimensions perform better. Convergent validity of dimension ratings was greater when participants

accurately perceived that the same dimension was being evaluated in two exercises.

Issues Involved in Performance Evaluations

Many authors have addressed the issues involved in evaluating the performance of employees, including senior administrators. These have been comprehensively discussed, for example, by Moorhead and Griffin (1995), and Genge (1991). Therefore, this section of the thesis does not include all of the issues and suggestions in the literature, but rather it provides a summary of the major points made by experts about the topic of performance evaluation. These points can be summarized as follows:

1. Assessment of performance involves *comparison* of actual performance in terms of the job descriptions or other agreed-upon criteria (Cummings & Schwab, 1973; Glasman & Heck, 1992; Heck & Marcoulides, 1992; Stufflebeam & Nevo 1993).
2. Appraisals are heavily dependent on the perceptions of the evaluator (Genge 1991; Moorhead and Griffin, 1995).
3. Frequency of performance evaluation relative to employer/employee needs affects the usefulness of the appraisal process (Fedor & Buckley, 1988).

Futher, Castetter (1992) has provided the following comprehensive list of the weaknesses of traditional performance evaluation procedures used in educational systems:

1. Appraisals are based on the personality of an individual rather than performance expectations and outcomes.

2. Most administrators are not qualified to assess the personality of an individual.

3. Appraisal tools lack validity.

4. Raters display biases.

5. Ratings and raters are subject to organizational influences.

6. Particular appraisal systems do not fit the needs of personnel.

7. Results of appraisals are not utilized to assist individual development.

8. Appraisees are fragmented into personality parts, which, when added together, do not reflect the whole person.

9. Appraisal devices do not provide administrators with effective counselling tools.

10. Most appraisal plans do not establish organizational expectations for individuals occupying specific positions.

11. Appraisals are arbitrary or unjust when used for discipline, salary increases, promotion, or dismissal.

12. Personnel often do not understand criteria upon which their performance is appraised.

13. Performance is not evaluated in terms of its contribution to enterprise goals.

14. Traditional appraisal procedures hamper effective communication between appraiser and appraisee.

15. Appraisal methodology does not provide an environment conducive to change in individual behavior.

16. Appraisal methodology does not encourage satisfaction of higher level needs of individuals, such as self-expression, creativity, and individualism.

17. The traditional performance appraisal models are usually not complementary to appraisal purposes (p. 255).

In the UK, concern about the need to evaluate head teachers – in addition to teachers – led to the formulation in 1991 of a set of guidelines for local education authorities (LEAs) in England and Wales. These included an initial meeting between appraisee and appraisers, task and/or classroom observation, an appraisal interview in which targets were set, preparation of an appraisal statement and a follow-up review meeting (Department of Education and Science, 1991). However, because this procedure has been performed patchily across and within the LEAs and partly because inadequate funds were available for this extensive and expensive set of activities, the UK Teaching Training Agency and the Office of Standards in Education (1996) is currently revising the 1991 statement (personal communication, National Association of Head Teachers, 1996). This UK experience also highlights some of the difficulties involved in the appraisal of personnel and senior administrators.

Performance Measurement and the Assessment Centre Method

Moorhead and Griffin (1995) defined performance measurement as the process by which a manager performs these functions:

- (a) evaluates the employee's work behaviors by comparing performance with previously established standards; (b) records the performance and

results of this comparison; and (c) communicates this information to the employee.

The assessment centre method and processes for candidate evaluation share a great deal in common with the above definition. The techniques of the assessment centre method are, however, typically far more structured because of the elements of trained, multiple assessors and behaviorally anchored situational exercises. This method of the use of multiple assessors using behaviorally anchored multiple assessment techniques allows for a more objective process of performance measurement than what often exists in the traditional workplace approaches.

Summary

The research literature is generally in agreement that when all of the complex elements of conducting an assessment centre are attended to and when the required processes are implemented appropriately, assessment centres tend to be valid predictors of management success, especially in private sector organizations. Competently designed and managed assessment centres also can be said to improve the ability of organizations to select and place managers, as well as stand the test of legal defensibility, should any such staffing decisions be challenged in a court of law.

Chapter 3

METHOD

This chapter provides a description of the research design, population, sample of subjects, instrumentation, and data-collection procedures, as well as statements of the research questions, delimitations, limitations and assumptions.

Background

This research project describes a study undertaken in a government of Alberta department where assessment centre methods were employed and where a two-year, follow-up was completed.

During the course of the establishment of the assessment centre in this study, the provincial government department from which the sample was drawn was recruiting to several key positions. The senior management team decided that it would be beneficial to have a pool of qualified internal candidates within the organization. This situation highlighted the need for an integrated, rational approach to human resource development and planning, specifically for senior management positions. The results of consultations among the departmental executive determined that a model for human resource development and planning was required to identify and develop the pool of management resources within this provincial government department.

As the director responsible for development I was charged with the task to establish a comprehensive and innovative approach to the traditional use of the assessment centre technique in order to meet the human resource development and planning needs of this large government department. After broad consultation with the

departmental senior management team, a detailed human resource development and planning model would be implemented. At the core of this human resource development and planning model would be the assessment centre. The assessment centre and its results were the focus of this study. Figure 1 provides an overview of the processes and outcomes of the human resource development centre and planning approach of which the assessment centre in this study formed a critical component.

The purpose of establishing the human resource development centre and planning model was to provide a framework for understanding the processes involved in achieving senior management succession. The model set out the overarching framework used to identify and develop a pool of qualified managerial talent. This model, which included the assessment centre, was designed to increase the probability that a variety of internal candidates would have the required knowledge, skills, and attributes for key positions and future leadership roles in the organization.

The human resource development centre and planning model, as outlined in Figure 1, was comprised of three primary processes: (a) data collection, (b) analysis, and (c) planning. Each of these three primary processes was made up of a number of sub-processes and elements.

The data-collection stage consisted of the assessment centre as described in this research. Individual performance profiles were prepared on the sample management group after their assessment and testing. In addition, training needs of individual managers, as defined

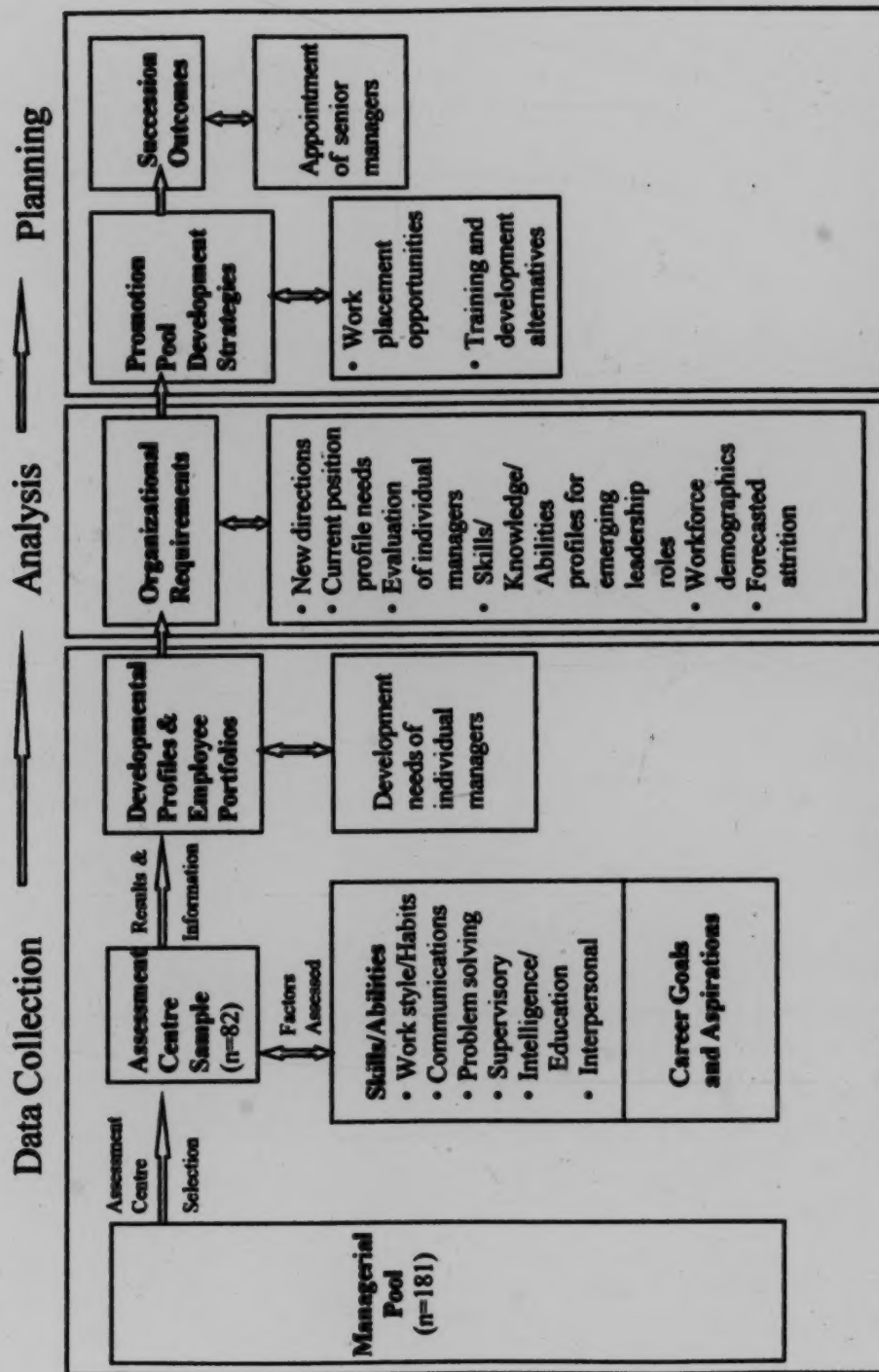


Figure 1. Human Resource Development Centre and Planning Model

by the assessment centre, led to the creation of personalized, professional development portfolios.

The second major component of the human resource development centre and planning model was the process defined as "analysis." Analysis, as outlined in Figure 1, was focused primarily on the current and evolving needs of this large government department. Consideration was given to the mission, mandate, operating principles, and new directions being established by the organization. In order to be successfully accepted and implemented, the senior management team considered that the model must both contribute to, and be directed by, the organization's strategic direction, mission, mandate, operating principles, and corporate values. Also included in this component of the model were considerations to the current and emerging senior management position profile requirements. These requirements took into account the assessment centre results of the skills and abilities of the management sample. In addition, the sample managers were evaluated based on their most recent performance appraisals. Projections were also made based on internal departmental research concerning work force demographics, as well as the forecasted attrition of the managers in order to prioritize personnel planning considerations.

The third major component of the model was the planning phase. This phase included succession planning and development of the managerial pool based on the projected organizational requirements. The key outcome of the human resource development and planning model was the establishment of a pool of competent succession candidates for critical positions in the organization. Two inter-related

strategies were required to support this key outcome. The first was the identification of the positions which were deemed critical by comparing current and projected organizational requirements. The second was the identification of individual managers who possessed both an enhanced understanding of these organizational requirements and the level of self-motivation to attempt to fulfill their own career aspirations. For these high-performing managers, developmental work placement and training opportunities were to be provided.

The assessment centre results as described in this thesis comprise the foundation to human resource development centre and planning model as described above and depicted in Figure 1.

As part of a Management Assessment Program, the department retained a consulting firm of industrial psychologists to provide information in five criterion areas on 82 managers through the use of a modified assessment centre approach.

In February 1988, the participating managers met with the consulting firm's staff for a full day of personal interviews, interest and aptitude testing, two simulations, one in-basket exercise, and completion of a standardized questionnaire. A two-page assessment summary report was prepared on each participating manager.

The data were summarized in two areas:

1. Identifying those employees with strengths and development needs in five criterion areas; and
2. Assessing strengths, development needs, and early potentials of this group of managers.

The five individual criterion areas are listed below:

1. **Problem-solving Skills** – the ability to (a) recognize the full depth and breadth of situations and problems, and (b) consider the longer-range as well as current consequences of their actions in solving the problem.

2. **Supervisory Skills** – the ability to influence groups and persons; knowledge of supervisory techniques; awareness of subordinates' concerns; and effectiveness in coordinating and controlling subordinates in standard work settings.

3. **Interpersonal Skills** – effectiveness in day-to-day dealings with others; gaining and maintaining respect for one's ideas; confidence in one's integrity; and general feelings of good will.

4. **Work Habits** – physical vigor and vitality demonstrated; degree of self-initiated work activity; and emphasis on organization and discipline of work time and effort.

5. **Management Potential** – the probability that the individual will develop the personal resources to cope with the complexities and responsibilities at the next level of management.

In addition to the above information provided by the consulting firm, the author collected information on the total divisional managerial population:

1. Classification or level in organization;
2. Five-year management performance appraisal history (MPAS);
3. Salary;
4. Age;
5. Gender;
6. Years in current job;

7. Years with department;
8. Number of positions held in department;
9. Educational level completed;
10. Department rating of Management Potential, as assessed by the manager's supervisor;
11. Department rating of Current Performance as assessed by the manager's supervisor; and
12. Department rating of Readiness for Promotion as assessed by the manager's supervisor.

Research Design

The purpose of this study was to explore the extent to which the assessment centre can be used as a predictor of management success in public sector organizations. An ex post facto design was deemed to be the best approach for studying variables that have not been manipulated by the researcher. Sowell and Casey (1982) stated that an ex post facto study is appropriate when the population and sample under study have already experienced the independent variable and then a study is conducted of its possible effects in terms of the dependent variables. The major limitation with this type of study design is that specific cause and effect relationships cannot be verified. The relationship of the independent to dependent variables can at best be considered correlational and not causal. A determination of causality and effect would be more verifiable in alternate experimental research design.

Population

The participants of this study were limited to the management group and the executive committee of a very large division of a provincial government department. This division consisted of approximately 2,000 employees of whom 188 were in the management group (181) and the executive group (7). The accessible population of 181 under study was limited to the management group of 163 managers and 18 senior managers. The seven divisional executive members were not included in the accessible population as they were used as raters in this study. The manager and senior manager classification each had three sub-levels. Accordingly, within the government classification system the sub-levels are designated levels one, two or three, with the third sub-level being the most senior for each respective group.

Sample

A group of 82 managers and senior managers was randomly selected by the divisional executive from the accessible population of 181 people to participate in the original assessment centre. These 82 managers participated in this research study and are referred to as "the sample."

General Research Question

What does the experience of one large public sector organization with the use of the assessment centre approach show about (a) the ability of the centre to predict management success, (b) the differences between the assessment provided by the centre and by traditional methods, and (c) the issues associated with adopting an assessment centre approach?

Specific Research Questions

The following specific research questions were formulated to direct the analyses of this study. They deal with a wide range of variables, and their relationships, which appear to be pertinent to both the operation of assessment centres and evaluation of personnel in organizations.

1. What was the extent of agreement between the assessments of Management Potential of the sample provided by (a) the assessment centre 1988 and (b) senior managers (1988 and 1990)?

2. (a) What was the extent of agreement between the assessments of Skill Levels of the sample provided by (a) the assessment centre (1988) and (b) senior managers (1990)?

(b) What skills are perceived by senior managers to be critical for success and promotion?

3. (a) What was the extent of agreement among the seven senior manager raters (1990) on assessment of the sample on the Four Skill Areas used by the assessment centre?

(b) What was the extent of agreement among the seven senior manager raters (1990) on assessment of the sample for Management Potential?

4. What was the extent of agreement among the seven senior manager raters with respect to Readiness for Promotion as assessed by (a) the seven raters (1990) and (b) the assessment centre (1988) and the department (1988)?

5. What is the extent of agreement among the seven senior manager raters (1990) with respect to assessment of Current Performance?

6. What correlation exists between (a) each manager's rating of Current Performance and (b) Management Potential ratings as assessed by the assessment centre (1988) and department (1988)?

7. To what extent did the seven senior manager raters (1990) consider that the assessment centre Management Potential ratings (1988) were "valid"?

8. What was the extent of agreement between the ratings by seven senior managers and the assessment centre (1988) for (a) Four Skill Areas and (b) Management Potential, Readiness for Promotion, and Current Performance (1990)?

9. What was the correlation between (a) selected demographic variables, earlier Management Performance Appraisal System assessments (MPAS – annual performance review of each employee), and selected Skills, Knowledge and Performance variables and (b) Management Potential ratings by the assessment centre (1988) and by the department (1988)?

10. What differences existed between the means of selected demographic variables and ratings by senior managers in 1990 on selected Skill, Knowledge and Performance variables, and earlier MPAS assessments, for the sample and other departmental managers?

Delimitations of the Study

This study was delimited in these ways:

1. Only managers in one public sector organization in Alberta were studied.
2. Only selected demographic variables, skills, and performance factors were included in this study.
3. Only one assessment centre evaluation was included.
4. Only two annual performance evaluations – 1988 and 1990 – were included.

Limitations of the Study

The study had these limitations:

1. The limited numbers and range of opinions obtained in the interviews could have biased the results.
2. The number of performance factors was limited to four – interpersonal skills, supervisory skills, efficiency of work habits, and problem-solving abilities. Thus the findings of the study did not necessarily permit valid generalizations concerning other possible performance indicators.
3. The factors included in the interviews to measure manager skill levels, performance, and potential probably did not cover the full range of possibilities. Thus the conclusions reached based on this research may not be complete.
4. The study was limited by several other factors that cannot be easily measured:
 - (i) the influence of organizational culture on the responses of the evaluating managers;
 - (ii) interpersonal factors and past working relationships between the senior evaluating managers and assessed managers; and

(iii) organizational policies and procedures for the placement and promotion of managers.

Assumptions of the Study

Several assumptions were made:

1. The consultant assessors understood the corporate culture and unique needs of the organization based on information provided to them in the orientation sessions by the author.
2. The management competency research and job-skills task analysis specific to the organization in this study – which were provided to the assessor consultants – were appropriately reflected in the skills and abilities testing components developed for the assessment centre.
3. The responses given by the senior managers in the interviews were true indicators of their perceptions.

Instrumentation and Data Collection

A structured interview questionnaire was developed (Appendix C) for purposes of interviewing the divisional executive committee members of the government department involved in the study. The questionnaire used in 1990 (Appendix C) used the same format as was employed in 1988. The structured interview questionnaire included the collection of data specific to the current assessment of management performance and management potential for advancement of those 82 managers who underwent the original assessment process in February 1988.

The structured interviewing technique that was employed in this research was a formal process in which set questions were asked and recorded in a standardized questionnaire form. Moser (1958) referred to this formal and structured interview technique as the "doorstep

method." The use of an unvaried set of questions is considered the norm for large-scale surveys.

The structured interview technique can be used for many purposes. It is used most often to survey public opinion on a wide range of subjects that require the quantification of data. This interview technique is designed essentially to collect the same information from each respondent in a sample. Richardson, Dohrenwend, and Klein (1965) referred to this technique as the "standardized interview method" and indicated that such an approach requires that all the answers of respondents must be "comparable and classifiable" (p. 34). These same authors further clarified this point by stating that the questions of the interviewer and answers of respondents "must deal with precisely the same subject matter--and differences or similarities between the responses must reflect actual differences or similarities between respondents and not differences due to the questions that were asked or to the meanings that were attributed to the questions" (pp. 34-35).

In a similar vein, Gorden (1975) referred to the structured interviewing technique as the scheduled interview method which is characterized by high control and specificity of the subject matter. This control and specificity are generally considered to be more effective and efficient in achieving uniformity of data, reliability of measurement, and reduction of latitude for interpretive bias.

Also, Gorden (1975, pp. 76-77) described the following advantages of the structured interview technique: (a) the provision of more opportunity to motivate the respondent to supply immediate, complex and accurate information; (b) the greater likelihood that the interviewee

is likely to respond promptly and accurately if question format is short and relatively simple; (c) greater control over the interview situation; and (d) a greater opportunity for the interviewer to evaluate the validity of the questionnaire information by observing the respondent's non-verbal behaviors and evidence of particular attitudes towards the nature of the information provided. In the structured interview question sequence for this dissertation, each individual respondent was required to answer a set of specific questions concerning each organizational manager that participated in the preliminary assessment process. Only the structured interview technique would allow for such a strategy without introducing undue bias into this portion of the data gathering process.

In addition to this data source, which was used primarily for the two-year follow-up and for comparative purposes, departmental personnel files were accessed for each of the 82 managers who underwent the original assessment process in order to determine these aspects: (a) management classification levels; (b) location of work placement; (c) annual salary; (d) management performance appraisal history; (e) sex; (f) years in present position; (g) years with the department; (h) level of education; and (i) original assessment centre results on the five criterion areas.

Further descriptive data were obtained by accessing government personnel information sources and reports for purposes of government-wide demographic comparisons.

Validity

The potential for differences which exist in the accuracy of alternative performance measurement techniques was a concern in this thesis, because two different but corroborating means of performance measurement were used. The accuracy and objectivity of the performance measurement techniques employed in this study were of some concern. In an attempt to ensure accuracy in the alternative performance measurement techniques – with a particular focus on the assessments made by senior managers – a number of safeguards were established. These safeguarding strategies were included: (a) all performance measurements made by senior managers required justification and detailed commentary with the author; (b) the performance measurement commentaries of senior managers were only incorporated into the results if these same managers had previous close contact with the assessee; (c) evaluation input of senior managers was formalized through a structured interview process and therefore rater discretion was somewhat limited; and (d) senior managers received a common orientation and training program as to their involvement in complementing the objectives of the department in evaluating and establishing the development needs of middle management personnel.

Frechette and Wertheim (1985) have corroborated the rationale of safeguard strategies as listed above. In addition, these same authors reported that the development-focused appraisal process may contain less potential for conflicting results since organizations (i.e., senior managers) have incentives for providing valid and objective information.

Validity is an indication of the ability of a test or instrument to measure what it claims or was designed to measure. Anastasi (1971) expanded this understanding of validity as to include not only what the test measures but also how well it does so. This same author also cautioned that we should guard against accepting that the name of a test or instrument is an ipso facto indication as to what is being measured. Anastasi indicated that the traits measured by a given test or instrument (irrespective of the label of the specific instrument) "can be defined only through examination of the objective sources of information and empirical operations utilized in establishing its validity" (p.99). The validity of an instrument cannot be reported to be generally high or low without specific reference to the particular purpose for which an instrument is being employed. Therefore, according to Anastasi, all procedures for determining the validity of an instrument must be concerned with the relationships between the instrumentation and other independently observable facts about the data that are the focus of study and the characteristics that may be the subject of extrapolation.

The specific methods and procedures for determining validity are generally classified into three major categories: content, criterion-related, and construct validity, (e.g., Zeller, 1988). The focus of this research was primarily on criterion-related validity in the context of various techniques of the assessment centre method. Zeller has defined criterion-related validity as "the correlation between an indicant and some criterion variable of interest." (p. 324)

While many research studies have documented the predictive validity of the assessment centre method, some advocates of the process have argued its merits on the basis of content validity. Since the heart of the assessment centre is a careful analysis of the job and task functions of specific positions which in turn are built into the various simulation exercises as well as including some standardized procedures, many respected researchers consider that the method can also be justified in terms of content validity (Adler, 1978; Ebel, 1977; Guion, 1977, 1978; Schmitt & Noe, 1983). Such support and justifications of the assessment centre are founded on the primary form of evidence for construct validity in the process, that is, the test construction/simulation exercises dimension of the method.

The specific assessment centre involved in this study, the results of which form the basis of this dissertation, was, of necessity initially concerned with the issue of content validity as it applied to the exercise and testing requirements of the assessment centre itself. According to Zeller (1988), content validity

focuses upon the extent to which the content of an indicant corresponds to the content of the theoretical concept it is designed to measure. Establishing content validity therefore involves specifying the domain of the content for the concept and constructing and selecting indicants that represent that domain of content. (p. 324)

For the purposes of this study, content validity was concerned with the demonstration that the assessment centre review procedures and specific exercises reflected the important aspects of job task-skills requirements and performance demands of the population. In the context of the assessment centre, content validity was concerned with

job-relatedness of the exercises and the linkages to performance relevance of the sample. Therefore, as Cohen (1980a) indicated, content validity is more likely to be achieved in the assessment centre when situational exercises and tests reflect the actual circumstances and setting of the job and as a consequence the more job-relevant information it provides.

Weislogel (1954) was one of the earliest researchers to point out that the situation test of any assessment process should allow the candidate to demonstrate three characteristics related to the job in question: (a) possession of the necessary skills; (b) recognition of the need to apply these skills; and, (c) motivation and willingness to apply these skills.

The notion of job-relatedness is therefore a crucial or essential characteristic of establishing situational exercises in the assessment centre. The extent to which a situational test is job related directly depends on how accurately it reflects the critical knowledge and competency requirements for successful and effective job performance. The situational tests within an assessment centre therefore assume a great deal of their content validity as a result of their knowledge and competency job-relatedness. Content validity should take into account not only the accuracy of the analysis of job content, but also the relative criticality and frequency of such activities.

Byham (1978) commented that the job analysis upon which assessment centre exercises are built are frequently inadequate. Thus the dimensions are not selected on content-valid data. Byham (1980) subsequently commented that the task analysis defines behaviors that

are associated with job success and must be accounted for adequately in the assessment centre by means of the following strategies:

(a) dimensions must be shown to be job related and to describe all common and important parts of the job; (b) exercises must be shown to be job related and to represent the most common and significant job activities; (c) these exercises must be comparable in complexity and difficulty to the required jobs; and (d) the dimensions must be shown to be observable in the exercises.

Similarly, Maher (1983) endorsed a thorough job analysis in order to best ascertain those elements that are consensually characterized as critical to the effective performance of the target position. The importance of validation of content cannot be over-emphasized in the assessment centre context as situational tests depend primarily on content validation as predictive validity is so difficult to achieve. The importance of content validity of the assessment centre was a priority consideration in the implementation of the assessment centre in this study.

I was in the unique role of having executive responsibility for the human resource training and development function of all departmental employees in this study. The design of the training and development function for approximately 2,000 employees was based on detailed competency analysis research for all departmental working groups and managers by job class. This existing competency-based foundation for the departmental training and development function allowed for detailed information to be provided to the management consulting firm in co-designing the assessment centre in this study. Detailed job and

task element analysis data were provided to the consulting firm for all management levels in order to assist in the development of appropriately focused and job-related tasks, exercises, and simulations.

Reliability

Gall, Borg, and Gall (1996) defined reliability as the "consistency, stability, and precision of test scores" (p. 197). Similarly, Kerlinger (1979) defined the essential nature of reliability to be stability, predictability, dependability, and consistency. Reliability, therefore, refers to the consistency of scores that would be achieved by the same individuals when re-examined with the same instrument on different occasions or as Anastasi (1971) stated "with different sets of equivalent items, or under other variable examining conditions" (p. 71). He also indicated that despite the best attempts at reducing error variance no instrument or test can be considered to be perfectly reliable. Concern with the issue of reliability as indicated by Kerlinger (1973) is most needed when a data base is derived from a single set of behavioral observations made over a relatively short period of time or with a single set of interviews.

Thorndike (1988) described three essential elements that must be considered relevant to reliability in research projects: (a) basic rationale, (b) procedures for data collection, and, (c) statistical procedures for data analysis depending on the data at hand. Reliability also refers to the consistency of scores or measures that would be achieved by the same individuals when re-examined with the same instrument on different occasions or "with different sets of equivalent items, or under other variable examining conditions" (Anastasi, 1971). Reliability is an

important consideration for the assessment centre because it is a factor in achieving high predictive validity. If measures used are not reliable, the result may be poorly run assessment centre programs of questionable predictive capacities.

This study included observational data based on a modified assessment centre process, ongoing experiential performance data, and performance potential assessments that occurred two years after the original employee assessments.

The assessment centre included situational exercises and structured experiences which were based on systematic procedures to determine management competencies; they were derived from a detailed job and task skills database. In order to increase reliability, the trained, professional assessors were also carefully briefed on the corporate culture and operating values of the department. In addition, members of the senior management team involved in evaluations were trained by professional consultants with respect to their roles in this endeavour. Reliability and validity were important considerations in this initiative in order to improve the processes of promotion and succession within the department.

There are complex logistical and operational problems inherent to the operation and implementation of the assessment centre. In this study, the process was exacerbated by the unique and divergent corporate culture of a work environment that included conflicting mandates, and a corporate culture in which competent, progressive thinkers were distinct from a significant number of less educated and marginally qualified senior managers in positions of authority. This

divergent culture could be characterized in operational terms as the community group having had historically the most intelligent and competent managers, while the institutional group had less educated and sophisticated managers. Institutional operations personnel could also be fairly characterized as less adept in both their management abilities and their corporate contributions than the community management counterparts. The institutional operations senior managers also expected to have greater control over promotion decisions and, therefore, their support for the assessment centre was far more tentative and reserved. When the assessment centre identified some institutional operations stalwarts as having limited abilities, and therefore reduced potential for advancement, the reliability of the whole process was perceived as flawed. Some institutional operations senior managers who had championed certain candidates throughout their careers had difficulty in accepting the objective results of the assessment centre. This reaction is not uncommon in organizations where the assessment centre has been newly introduced.

Those designing assessment centres should, in my opinion, be aware that no matter how well implemented or operationally sound the centre may be, in the beginning at least, some organizational opposition will be encountered. Many managers have what I believe to be the equivalent to a "coefficient of self-delusion" – they possess a negative a priori view of any process that objectifies personnel decision-making and reduces their own control on such matters. This was most common among senior managers who expressed some disappointment over the performance of "their" managers in the assessment centre. These senior

managers consistently felt the process was not reflective of reality because they knew intimately the work performance of a particular individual as being satisfactory. These same managers consistently failed to recognize that the candidate was not being assessed for current job performance, but rather for a future job class. In the minds of these senior managers, no amount of objective data, statistical profiles, or other job task analysis evaluative information was to be believed. Most senior managers, on the other hand, could be swayed by objective facts. It became clear that the on-going education of both staff and senior managers was critical throughout the process.

The commentary provided to the assessment centre operational personnel by the sample managers was always consistent and complimentary to the process. Irrespective of their scores on the exercises at the assessment centre, the sample managers felt that the process was fair and objective. As one candidate stated, "Compared to a 45 minute interview, here I was given an honest shot. I was seen by four assessors over a two-day period. I felt I was treated very fairly by the assessment centre team and learned a great deal from the follow-up debriefing session and feedback provided."

All members of the sample management group were subsequently provided with specific feedback on their developmental requirements. Extensive developmental recommendations were made with both educational and training resources being identified from within as well as outside the provincial government. Every sample manager who was assessed was provided with an individualized, prescriptive developmental plan which identified courses from local universities,

specific internal training programs, and other operationally based developmental opportunities. At the time there was a large-scale commitment to the assessment centre process by this organization. It was therefore particularly disappointing to all sample management candidates when the departmental executive decided two years later that the whole initiative would be abolished "due to fiscal restraint and operational concerns." Although short-lived, the assessment centre in this study which served as both an organizational and personnel development vehicle, can be said to have been a success.

Types of Analyses

Four major types of analyses were carried out on the data, as detailed below.

1. Descriptive statistics (means and percentage frequency distributions) were used to depict characteristics of the sample managers (82), all department managers (181), and the overall public service manager population (2304) on the measures outlined in this chapter. Thus, information was provided on the general educational level, age, performance, and skill levels of the public sector managers in the study.

2. The sample of the 82 randomly selected managers was compared to the accessible population of 181 department-wide managers. Demographic comparisons using chi square goodness of fit tests were also conducted to determine whether this sample group was statistically different from the department managers and/or the overall public service manager population. Comparisons were made on age, length of service, classification level, and gender. These comparisons

were made to determine whether use of inferential statistics was justifiable.

3. The interview data that were compiled from a structured questionnaire (Appendix C) involving the divisional executive committee in 1990 were used to determine the predictive validity of the original assessment processes that focused on general management abilities for each of the 82 randomly selected managers. Members of the divisional executive committee were interviewed individually and in isolation from one another in order to respect the confidentiality of the data and also to determine inter-rater reliability. The interview data were compiled on a specially designed comparative scale that allowed for correlational analysis to be conducted between the original assessments and the follow-up ratings of performance done by the divisional executive committee.

4. Correlational analysis (Pearson product moment correlation coefficient) was undertaken to determine which statistically significant relationships ($p < .01$ and $p < .05$) existed between selected variables in the study. Of particular interest was the identification of those variables which predict high overall Management Potential.

5. The differences between means of some variables were tested for statistical significance using *t*-tests.

Summary

This chapter described the variables which were assessed and the research design of this study. In addition to the situational exercises and structured experiences of the assessment centre in 1988, a structured interview questionnaire technique was used in the same

year. A follow-up study was also conducted on the sample in 1990. It included further descriptive data for comparative purposes.

In the interests of both reliability and validity, careful attention was paid to the orientation and training of both the assessor consultant team and the senior management team who were instrumental in the provision of data for this study. Therefore, reliability and validity were important considerations in this thesis. They are explored further in Chapter 5 which presents the results of this study.

Chapter 4

DESCRIPTION OF THE SAMPLE

This chapter presents data about the 82 managers in the sample, the 181 managers in the department from which it was drawn, and the 2304 managers in the public service. Chi-square analyses are included to assess the extent to which the sample of 82 managers was representative of either the accessible population of 181 managers or the total population of all managers in the provincial public service. Tables are provided on comparative performance and predictions concerning the sample.

Gender

Table 1 shows that in terms of gender, the distribution of the sample managers was similar to the overall departmental distribution and government distribution. At least 85% of the managers in the sample, department, and government were male.

Management Classification Levels

Table 2 presents the distribution of the sample, accessible population and target population by management classification level. The table shows that most of the managers in the sample were at Manager III level. This was a higher representation than found in the department (45%). Comparisons with the total public service are difficult because the specific distributions by management levels were not available for that group. This department had very few Senior Managers (10%) as compared to the total public service (37%).

Table 1
Percentage Distributions of Sample, Department, and Total Public
Service Managers – by Gender

Gender	Sample N = 82 % (n)	Department N = 181 % (n)	Public Service N = 2304 % (n)
Male	87 (71)	86 (156)	85 (1,958)
Female	13 (11)	14 (25)	15 (346)

Note. The chi square value for data in Table 1 was 0.3363. This value was not statistically significant ($p=.845$, $df=2$).

Table 2
Distribution of Classification Levels of Sample, Department,
and Total Public Service

Classification level	Sample N = 82 % (n)	Department N = 181 % (n)	Public Service N = 2304 % (n)
Manager I	1 (1)	3 (6)	n/a
Manager II	34 (28)	41 (75)	n/a
Manager III	60 (48)	45 (82)	54 ¹ (1,244)
Senior Manager I	2 (2)	4 (7)	n/a
Senior Manager II	3 (3)	6 (11)	n/a
Senior Manager III	0	0	38 ² (876)
Executive Officer	0	- [7] ³	8 (184)

Notes: ¹This figure includes all Managers (I,II, and III) because detailed distributions were not available.

²This figure represents all Senior Managers (I,II, and III) because detailed distributions were not available.

³ These 7 Executive Officers were used as raters in this study and were therefore were not part of the accessible population of 181 from which the sample was drawn.

⁴ The chi square value for the sample and department data in Table 2 was 3.65 when the classification level categories were Manager I and II, Manager III, and Senior Managers. This value was not statistically significant ($p=.17$; $df=2$).

Age

The age distributions are shown in Table 3. The department managers tended to be younger than were those in the public service distribution. For example, only 9% of the managers in the department were 51 years or older as compared with 21% in the total public service. The table also shows that the managers in the sample tended to be younger than their departmental or public service colleagues. The largest number of managers that went through the assessment centre were between 31 and 40 (58%). In the department overall, 51% of the managers were in this range, as compared with 32% of public service managers. The younger population in the department could have resulted from a significant downsizing initiative a few years earlier when many managers took advantage of an early retirement program.

Length of Service

Table 4 shows the distributions of length of service. Again, reflecting the differences found in the age distribution, the provincial public service had more managers with 21 or more years of service (15%) compared to the department (5%) and the sample (1%). As well, the sample and departmental managers displayed differences in regards to length of service in the "11 to 15" and "16 to 20 year" categories. The public service had a substantially lower percentage of management personnel with 11 to 15 years of experience as compared to the sample and departmental managers. There were slight differences among the three groups in the "5 years or less" and "6 to 10 years" of service categories.

Table 3
Age Distributions of Sample, Department, and Total Public Service
(as of June 1988)

Age Category	Sample N = 82 % (n)	Department N = 181 % (n)	Public Service N = 2304 % (n)
30 and under	5 (4)	3 (5)	2 (46)
31 - 35	29 (24)	18 (33)	10 (230)
36 - 40	29 (24)	33 (60)	22 (507)
41 - 45	24 (20)	22 (40)	26 (599)
46 - 50	10 (8)	15 (27)	19 (438)
51 - 55	2 (2)	6 (11)	12 (276)
56 - 60	0	2 (4)	9 (208)
61 - 65	0	1 (1)	0

Note. The chi square value for the sample and department data in Table 3 was 7.98 when the age categories were 35 and under, 36-40, 41-45, and 46 and over. This value was statistically significant ($p=.049$; $df=3$).

Table 4
Distributions of Length of Service of Sample, Department,
and Total Public Service (as of June 1988)

Length of service	Sample N = 82 % (n)	Department N = 181 % (n)	Public Service N = 2304 % (n)
5 years or less	17 (14)	14 (25)	18 (415)
6 to 10 years	32 (26)	29 (53)	32 (737)
11 to 15 years	34 (28)	36 (65)	24 (553)
16 to 20 years	16 (13)	15 (27)	11 (253)
21 to 25 years	0	3 (6)	8 (184)
26 to 30 years	1 (1)	2 (5)	5 (115)
More than 30	0	0	2 (47)

Note. The chi square for the sample and department data in Table 4 was 3.29 when the length of service categories were 10 years and under, 11-20, and more than 20. This value was not statistically significant ($p=.20$; $df=2$).

Number of Years on Current Job

Table 5 shows that most of the sample managers (88%) had been in their current jobs for five years or less. This was slightly more than for the department as a whole. Data for the public service on a province-wide basis were not available.

Educational Levels

Percentage distributions of the educational levels of the sample managers and those in the department are shown in Table 6. Again, comparative data for the public service were not available. A slightly higher, but non-significant, proportion of the sample managers (51%) had one or more degrees than did departmental managers (44%). However, as can be seen from the data, the sample managers had a wide range of educational backgrounds.

Salary

The average salary of the managers in the sample was similar to that of all managers in the department (Table 7). The standard deviation for the sample managers' salary was considerably less than that for departmental managers.

Performance Appraisal Ratings

The average performance appraisal ratings (MPAS) over the previous five-year period were compared. The data in Table 8 show that there was little difference between the distributions of the official appraisal ratings of the sample managers and the department as a whole.

Table 5
Distribution of Years on Current Job of Sample and Department
(as of June 1988)

Years on current job	Sample N = 82 % (n)	Department N = 181 % (n)
Less than 5 years	88 (72)	84 (152)
6 to 10 years	10 (8)	14 (25)
11 to 15 years	2 (2)	2 (4)

Note. The chi square value for the data in Table 5 was .8499. This value was not statistically significant ($p=.654$, $df=2$).

Table 6
Distribution of Educational Levels of Sample and Department
(as of June 1988)

Educational Level	Sample	Department
	N = 82 % (n)	N = 181 % (n)
Partial high school	9 (7)	11 (20)
High school diploma	16 (13)	21 (38)
Partial college	4 (3)	8 (14)
College diploma	16 (13)	11 (20)
Partial university	6 (5)	5 (9)
University degree	31 (25)	26 (47)
More than 1 degree	20 (16)	18 (33)

Note. The chi square value for the data in Table 6 was 4.21. This value was not statistically significant ($p=.648$, $df=6$).

Table 7
Distribution of Salaries of Sample and
Department (as of June 1988)

Salary	Sample N = 82	Department N = 181
Mean	\$43,329	\$43,336
Standard deviation	\$3,180	\$4,204

Table 8
Distribution of Average Five-Year Performance Appraisal Ratings
of Sample and Department

Performance category	Sample N = 82 % (n)	Department N = 181 % (n)
Level 1 – Extremely unsatisfactory	0	0
Level 2 – Unsatisfactory	2 (1)	2 (4)
Level 3 – Satisfactory	80 (66)	83 (150)
Level 4 – Above average	18 (15)	15 (27)
Level 5 – Outstanding	0	0

Note. The chi square value for the data in Table 8 was .7329 which was not statistically significant ($p=.6932$, $df=2$).

Readiness for Promotion

The distribution in Table 9 represents the assessments of the senior managers of the Readiness of Promotion of the 82 sample managers. As can be seen from the table, 44% of the sample managers were assessed to be ready for promotion within one or two years, while 34% were assessed to be more than three years away from being ready for promotion.

As part of the study, senior managers were asked to rate the current performance of the sample managers on a five-point scale ranging from 1 being "very poor" to 5 being "outstanding." As can be seen from Table 10, most managers were rated as "average." The second largest category (26%) were rated as "above average." Very few were rated as "poor" or "outstanding."

Summary

A large majority of managers in the sample were male. The average manager in the sample tended to be at the Manager III level, was between 31 and 40, had between 6 and 15 years of service, had been on the job five or fewer years, had university education, and was at Level 3 on performance appraisal. Other than being slightly younger, the distribution of demographic data for sample managers did not differ substantially from those for the department population of managers. It did differ substantially from that of the total group of public service managers on age and length of service.

Table 9
Distribution of Senior Managers' Perceptions of
Readiness for Promotion of Sample (1990)

Years until ready for promotion	%	(n)
Within 1 year	16	(13)
Within 2 years	28	(23)
Within 3 years	22	(18)
More than 3 years	34	(28)

Table 10
Percentage Distribution of Senior Managers' Summary Evaluation of
Current Performance of the Sample (1990)

Performance rating	%	(n)
Very poor (1)	1	(1)
Poor (2)	8	(7)
Average (3)	64	(52)
Above average (4)	26	(21)
Outstanding (5)	1	(1)

CHAPTER 5

RESULTS AND DISCUSSION OF FINDINGS

This chapter presents results of the study. They are arranged in order of specific research questions. The analyses include use of percentages, Pearson correlation coefficients, means, and *t*-tests. The five criterion areas (Problem-solving, Supervisory Skills, Interpersonal Skills, Work Habits, and Management Potential) constitute the primary focus of the research pertaining to inter-rater reliability.

Specific Research Question 1

What is the extent of agreement between the assessments of Management Potential of the sample provided by (a) the assessment centre (1988) and (b) senior managers (1988 and 1990)?

Table 11 shows the assessment of the sample managers based on two different methods – assessment centre in 1988 and subsequent performance reviews in 1988 and 1990. The first row is the distribution of potential of the 82 managers as determined by the assessment centre in 1988. The sample managers were also rated in 1988 by senior managers and again in 1990 as part of the research for this study. The 1988 senior managers' assessments of Management Potential were based on a five-point scale where 1 was "very low" and 5 was "very high" in potential. The assessment centre consultants, however, in consultation with the deputy minister, chose to use a three-point rating scale (low, medium and high) for the assessment of the Management Potential of the sample managers. Therefore, for purposes of compatibility of analysis in this study, the senior managers' 1988 potential five-point ratings were converted to a three-point scale as

Table 11

Assessments of Management Potential of Sample by Assessment Centre
(1988), Department (1988), and Department (1990)

Rating method	"Low" potential % (n)	"Medium" potential % (n)	"High" potential % (n)
1988 Assessment Centre	26 (21)	44 (36)	30 (25)
1988 Department ¹	12 (11)	72 (59)	13 (12)
1990 Department ¹	14 (12)	67 (55)	19 (15)

Notes: ¹ "Low" includes those with a very low (1) or low (2) rating.

"Medium" includes medium (3).

"High" includes high (4) and very high (5).

follows: 1 and 2 were added to give the "low" Management Potential rating; 3 was used as the "medium" rating; and 4 and 5 were added to give the "high" rating. Based on the data in Table 11, the assessment centre results placed more managers at the extremes of the distribution than did senior manager's ratings in either 1988 or 1990. That is, the assessment centre rated more managers as low Management Potential and more managers as high Management Potential. Most of the managers were rated as medium by the department's senior management. The chi square value for the data in Table 11 was 15.52 which was statistically significant ($p=.0037$, $df=4$).

The correlation coefficient between the 1988 and 1990 department ratings of the sample managers' Management Potential was .54 which was statistically significant ($p<.01$). Therefore, the department ratings of Management Potential over the two-year time period of this study were moderately reliable.

Specific Research Question 2 (a)

What is the extent of agreement between the assessments of Skill Levels of the sample provided by (a) the assessment centre (1988) and (b) senior managers (1990)?

Ratings by assessment centre (1988) and senior managers (1990) of four specific skill levels of the sample managers were compared. The results are shown in Table 12. As can be seen from the table, in 1990 more of the sample managers were rated "high" in their interpersonal skills (34% compared to 21%) and slightly more in supervisory skills (21%:17%). In 1990, slightly fewer managers were rated "high" in work habits (32%:38%) and considerably fewer in problem solving (23%:40%).

Table 12
Percentage Distribution of Assessment Centre Results and
Senior Managers' Perceptions of Skill Levels of Sample

Skill area	Assessment Centre			Senior Managers		
	1988			1990		
	Low %	Med. %	High %	Low %	Med. %	High %
Interpersonal	13	66	21	10	56	34
Supervisory	40	43	17	13	66	21
Work habits	20	43	38	10	58	32
Problem-solving	18	42	40	11	66	23

Also in 1990, fewer sample managers were rated "low" in supervisory skills (13%:40%), work habits (10%:20%), and problem-solving (11%:18%) by the senior managers. Most of the sample managers were rated "medium" for these skill areas in 1990.

Specific Research Question 2 (b)

What skills are perceived by senior managers to be critical for success and promotion?

An informal one-hour discussion session followed each of the structured interviews conducted by the researcher with each member of the senior management team. Each senior manager was requested to identify the critical criteria for success and promotion in the organization that went beyond the four skill areas used in this research. Their individual candor and openness on this matter provided considerable information and insight that would otherwise have been difficult to identify and research. Their commentaries were striking in that there was a great deal of consistency among them.

However, I was surprised by what criteria were *not* mentioned. For example, only one senior manager mentioned specifically that honesty, integrity, and ethical behavior were important considerations in managing for success and recognition in the organization. Any reference to positive leadership qualities were also somewhat conspicuous by their absence in the commentary of the senior management team. Commonly mentioned were such qualities or characteristics as possessing a ruthless, aggressive management style as being a necessary ingredient for survival and success in this organization.

Other necessary ingredients for survival and success that were commonly mentioned were as follows: (a) preoccupation with the corporate image; (b) demonstrating consistent and extreme loyalty to particular individuals (as opposed to the organization); (c) possessing the ability to function effectively under extreme pressure without demonstrating any stress reactions; (d) ability to function effectively within an organization that had a management ethos that was essentially, autocratic, and insensitive to the needs of both line and other management personnel; (e) possessing superior financial management skills; (f) having the ability to understand the existing political climate both within and outside the bureaucracy as well as possessing the intuitive sense to detect emerging changes in both these arenas; and (g) being able to work in an organization that demanded a very high degree of accountability for decision processes.

Specific Research Question 3(a)

What is the extent of agreement among the seven senior manager raters (1990) on assessment of the sample of the Four Skill Areas used by the assessment centre?

Several correlational analyses were carried out on the potential ratings and the skill categories to determine the extent of agreement.

The first set of analyses looked at inter-rater reliability, that is, the extent to which assessments across different raters and rating methods were consistent. Different approaches were used to determine inter-rater reliability.

Correlation coefficients were calculated between the ratings given by the seven members of the senior management team on the specific

skills of assessment centre candidates and their Management Potential. These Skills Areas were Interpersonal Skills, Supervisory Skills, Work Habits, and Problem-solving Abilities. These data were collected in 1990 as part of this study. The results are presented in Tables 13 to 16.

Table 13 shows the correlation coefficients for the seven raters on their assessment of Interpersonal Skills of the total sample of 82 managers. The raters were to make assessments only on those managers whom they felt they knew well enough to assess. The SPSS program was set to use pair-wise deletion. Therefore, in some instances there were fewer cases on which to calculate the coefficient. One advantage in this research, however, was that all members of the senior management team had been with the department for well over 10 years and, in some cases, had over 20 years of departmental experience. Therefore, each member of the senior management team had at one time or another either a direct working relationship or considerable knowledge about most of the managers in the sample. In some cases the smaller sample sizes may have contributed to a lack of statistical significance.

Given the above cautions, it can be seen from the data in Table 13 that in only four instances did statistically significant correlations exist between the raters and their assessments of Interpersonal Skills. This suggests that on this variable, and among this group of raters, the inter-rater reliability was rather low.

Table 14 shows the inter-rater correlation coefficients for Supervisory Skills. Again, in only five cases were statistically significant ($p < .05$) correlation coefficients obtained.

Table 13
Correlation Coefficients Between Ratings Given by Seven Senior
Managers of Interpersonal Skills of Sample (1990)

	Rater 1	Rater 2	Rater 3	Rater 4	Rater 5	Rater 6
Rater 2		.24				
Rater 3		.29	.15			
Rater 4		.15	.24	.36		
Rater 5		.54**	.44*	.41	.08	
Rater 6		.45**	.21	.11	.07	.23
Rater 7		.28	-.10	-.30	-.13	.11
						.48*

Notes: * indicates statistical significance at the .05 level.

** indicates statistical significance at the .01 level.

Table 14
Correlation Coefficients Between Ratings Given by Seven
Senior Managers of Supervisory Skills of Sample (1990)

	Rater 1	Rater 2	Rater 3	Rater 4	Rater 5	Rater 6
Rater 2		.27				
Rater 3		.04	-.16			
Rater 4		.07	.14	.00		
Rater 5		.53**	.56**	.10	.00	
Rater 6		.34*	.50**	-.02	.11	.30
Rater 7		.30	.58**	.10	.35	.39

Notes: * indicates statistical significance at the .05 level.

** indicates statistical significance at the .01 level.

Table 15
Correlation Coefficients Between Ratings Given by Seven Senior
Managers of Efficiency of Work Habits of Sample (1990)

	Rater 1	Rater 2	Rater 3	Rater 4	Rater 5	Rater 6
Rater 2		.54**				
Rater 3		.09	.01			
Rater 4		.20	.24	.04		
Rater 5		.31	.30	.01	.04	
Rater 6		.67**	.39*	.15	.21	.13
Rater 7	-.09	-.19	-.46	-.44	-.04	-.22

Notes: * indicates statistical significance at the .05 level.

** indicates statistical significance at the .01 level.

Table 15 shows the inter-rater correlation coefficients for efficiency of Work Habits. Statistically significant ($p < .05$) relationships were obtained in only three cases, two involving Rater 6 and two involving Rater 1.

Finally, Table 16 shows the correlations between the senior managers on Problem-solving Abilities. In only three cases were statistically significant ($p < .05$) relationships obtained, all again involving Rater 6. In summary, in the areas of Interpersonal Skills, Supervisory Skills, Work Habits, and Problem-solving Abilities, there was a low extent of agreement in assessment among the senior management raters.

Specific Research Question 3 (b)

What is the extent of agreement among the seven senior manager raters (1990) on assessment of the sample for Management Potential.

The inter-rater correlation coefficients on assessment of Management Potential are shown in Table 17. As the data show, there were 11 cases (out of a possible 21) of statistical significance indicating that even though senior managers showed little agreement on the Individual Skills components, there was a higher degree of agreement on Management Potential. The inter-rater reliability on Management Potential was higher than for the Individual Skills components.

Specific Research Question 4

What is the extent of agreement among the seven senior manager raters with respect to Readiness for Promotion as assessed by (a) the seven raters (1990) and (b) the assessment centre (1988) and the department (1988)?

7

Table 16
Correlation Coefficients Between Ratings Given by Seven Senior
Managers of Problem-solving Abilities of Sample (1990)

	Rater 1	Rater 2	Rater 3	Rater 4	Rater 5	Rater 6
Rater 2	.22					
Rater 3	.27	.35				
Rater 4	.40	.07	-.21			
Rater 5	.22	.37	-.01	.20		
Rater 6	.38**	.52**	.06	.18	.45*	
Rater 7	.06	-.10	-.17	.10	-.12	.01

Notes: * indicates statistical significance at the .05 level.

** indicates statistical significance at the .01 level.

Table 17
Correlation Coefficients Between Ratings Given by Seven Senior
Managers of Management Potential of Sample (1990)

	Rater 1	Rater 2	Rater 3	Rater 4	Rater 5	Rater 6
Rater 2	.50**					
Rater 3	.63**	.34				
Rater 4	.17	-.10	-.07			
Rater 5	.55**	.68**	.53*	.07		
Rater 6	.45**	.48*	.49*	.12	.49*	
Rater 7	.53**	.39	.40	-.16	.34	.39*

Notes: * indicates statistical significance at the .05 level.

** indicates statistical significance at the .01 level.

A similar finding holds for Readiness for Promotion to the next level (Table 18). Although there were only seven cases of statistical significance at the .05 level, there appeared to be more agreement on this factor than on the Individual Skills components, but lower reliability than on Management Potential.

Table 19 shows the correlation coefficients between each senior manager's 1990 rating of Readiness for Promotion and the Management Potential ratings of the assessment centre (1988) and previous Management Potential ratings (1988). The correlations were expected to be negative as the higher the potential, the sooner a manager in the sample would be ready for promotion. As can be seen from the data in Table 19, six correlation coefficients were statistically significant. The means of the raters' ratings also were significantly correlated ($p < .01$) with both the assessment centre and previous departmental Management Potential ratings.

Specific Research Question 5

What is the extent of agreement among the seven senior manager raters (1990) with respect to assessment of Current Performance?

Table 20 shows similar results to Table 18. There were seven cases of statistical significance at the .05 level regarding the manager's Current Performance with Raters 5 and 6 having three each of these seven.

Specific Research Question 6

What correlation exists between (a) each manager's rating of Current Performance and (b) Management Potential ratings as assessed by the assessment centre (1988) and department (1988)?

Table 18
Correlation Coefficients Between Ratings Given by
Seven Senior Managers of Readiness for Promotion
to the Next Level of Sample (1990)

	Rater 1	Rater 2	Rater 3	Rater 4	Rater 5	Rater 6
Rater 2	.67**					
Rater 3	.45	.45				
Rater 4	.26	.33	.15			
Rater 5	.69**	.51*	.55*	.34		
Rater 6	.60**	.60**	.10	.24	.48*	
Rater 7	.29	.07	-.22	-.28	.36	.23

Notes: * indicates statistical significance at the .05 level.

** indicates statistical significance at the .01 level.

Table 19
Correlation Coefficients Between Ratings of Readiness for Promotion by
Seven Senior Managers (1990) and (a) Assessment Centre (1988)
and (b) Department (1988)

Rater of Readiness for Promotion (1990)	Assessment Centre (1988) Readiness for Promotion	Dept. Rating (1988) Readiness for Promotion
1	-.42**	-.35**
2	-.17	-.20
3	-.21	-.35
4	-.40	-.34
5	-.41*	-.60**
6	-.21	-.30*
7	-.41*	-.31
Mean	-.48**	-.47**

Notes: * indicates statistical significance at the .05 level.

** indicates statistical significance at the .01 level.

Table 20
Correlation Coefficients Between Ratings Given by Seven Senior
Managers of Current Performance of Sample (1990)

	Rater 1	Rater 2	Rater 3	Rater 4	Rater 5	Rater 6
Rater 2		.61**				
Rater 3		.12	-.12			
Rater 4		.22	-.02	-.06		
Rater 5		.66**	.48*	.18	.29	
Rater 6		.55**	.60**	.05	.13	.36
Rater 7		.54**	.32	-.14	.35	.41*

Notes: * indicates statistical significance at the .05 level.
 ** indicates statistical significance at the .01 level.

Relevant information is shown in Table 21. The Current Performance ratings as seen by senior managers (1990) were correlated against both the assessment centre and previous departmental (1988) Management Potential ratings. Nine statistically significant ($p < .05$) correlations were obtained between Current Performance and both assessment/departmental ratings of Management Potential. The correlations tended to be higher between the average Current Performance ratings by senior managers and the assessment centre Management Potential ratings. In other words, the Current Performance of the sample managers, as computed by the mean rating scores of the seven senior managers, correlated more highly with their assessment centre ratings of Management Potential, than it did with any Management Potential ratings of any individual senior manager. The reason for this apparent anomaly was not explored.

Specific Research Question 7

To what extent did the seven senior manager raters (1990) consider that the assessment centre Management Potential ratings (1988) were "valid"?

As part of this study, each senior manager in 1990 was asked, "The original assessment data in 1988 indicated this manager has a ___ potential rating. After two years, do you feel that this was a valid assessment?" The results are shown in Table 22. (The table below includes only those assessments for which the raters had an opinion.) Overall, the senior management agreed with the assessment centre ratings 75% of the time. Individually, the levels of agreement ranged from a low of 61% to a high of 90%. In terms of senior managers'

Table 21
Correlation Coefficients Between Ratings of Current Performance (1990)
and Management Potential by Assessment Centre (1988)
and Department (1988)

Rater of Current Performance (1990)	Assessment Centre Management Potential Ratings (1988)	Department Management Potential Ratings (1988)
1	.50**	.44**
2	.27	.29
3	.20	-.09
4	.44*	.17
5	.50**	.48**
6	.44*	.56**
7	.56**	.39*
Mean	.60**	.43**

Notes: * indicates statistical significance at the .05 level.

** indicates statistical significance at the .01 level.

Table 22
Percentages of Responses of Senior Managers in 1990 Who Considered
That the 1988 Assessment Centre Potential Ratings Were "Valid"

Rater	% Yes
1	72
2	72
3	61
4	61
5	81
6	80
7	90
Overall	75

perceptions, there was a reasonably high level of feeling that the assessment centre ratings were valid.

2 The Pearson Product Moment Correlation Coefficient was calculated between the 1988 assessment centre Management Potential ratings and the 1988 senior managers' Management Potential ratings of all 82 people in the sample. The correlation coefficient was .26 which was statistically significant at the .01 level. Therefore, although a statistically significant relationship existed between the two different methods of assessing potential, the actual value was low. Knowing the results from the assessment centre would only improve predictability of senior managers' ratings by about 6% (.26 squared).

In addition, the correlation coefficient between the 1988 assessment centre Management Potential ratings and the 1990 senior managers' Management Potential ratings was computed. The Pearson r was .47 which was statistically significant at the .01 level. This relationship was stronger between the assessment centre and senior managers' Management Potential ratings done two years after the original assessment centre than those done in the same year as described above.

Specific Research Question 8

What is the extent of agreement between the ratings by seven senior managers and the assessment centre (1988) for (a) Four Skill Areas and (b) Management Potential, Readiness for Promotion, and Current Performance (1990)?

The Pearson correlation coefficient was calculated between the assessment centre skills rating and the senior managers' skills rating.

The results are shown in Table 23. As can be seen from the data, little agreement was found between the senior management raters and the individual Skills Areas as measured by the assessment centre. Only two of the 28 correlation coefficients were statistically significant ($p < .05$). However, there was a higher level of agreement on Management Potential where four of the seven correlation coefficients were statistically significant ($p < .05$). The managers and the assessment centre appear to have been taking different factors into account in their ratings.

Finally, correlations were computed among the variables in this study. These are shown in Table 24. All the correlations were based on the means from the senior management ratings. As can be seen from the table, all the correlation coefficients except one were statistically significant at the .01 level. The lowest coefficients were obtained for Work Habits.

Specific Research Question 9

What is the correlation between (a) selected demographic variables, earlier MPAS assessments, and selected Skills, Knowledge, and Performance variables and (b) Management Potential ratings by the assessment centre (1988) and by the department (1988)?

Table 25 shows the correlation coefficients between a number of variables and the assessment centre and departmental ratings of Management Potential. As can be seen from the table, the assessment centre Management Potential ratings had more statistically significant correlation coefficients with the selected variables than did the department ratings. Based on significant correlation coefficients, those

Table 23
Correlation Coefficients Between Ratings of Skill Areas and
Management Potential by the Assessment Centre (1988)
and Senior Managers (1990)

Rater	Interpersonal Skills	Supervisory Skills	Work Habits	Problem-Solving Skills	Management Potential
1	.24	.23	.16	.34*	.42*
2	.12	-.02	.16	.02	.15
3	-.12	.02	-.16	-.12	.01
4	.01	.37	.30	.21	.28
5	.14	-.03	.28	.13	.51*
6	.43*	-.08	.15	.25	.30*
7	.32	.31	-.22	-.25	.38*

Note: * indicates statistical significance at the .05 level.

Table 24
Correlation Coefficients Between Ratings Given by Senior Managers for
Four Skill Areas and for Management Potential, Readiness for
Promotion, and Current Performance (1990)

Skill Area	Management Potential	Readiness for Promotion	Current Performance
Interpersonal	.66**	-.67**	.64**
Supervisory	.59**	-.59**	.59**
Work Habits	.48**	-.49**	.33*
Problem-solving	.65**	-.60**	.55**

Notes: * indicates statistical significance at the .05 level.
 ** indicates statistical significance at the .01 level.

Table 25

Correlation Coefficients Between Selected Variables and Management
Potential Ratings by Assessment Centre (1988) and Department (1988)

Variable	Assessment Centre	Department
Salary	.34*	.42**
Age	-.28*	-.30*
Time on job	-.34**	-.40**
Length of service	-.30*	-.17
Education	.42**	.34**
MPAS 83-84	.02	-.05
MPAS 84-85	.04	-.13
MPAS 85-86	-.01	.01
MPAS 86-87	.08	.13
MPAS 87-88	.20	.42**
Written communications ¹	.38**	.17
Written content ¹	.36**	.09
Written organization ¹	.35**	.12
Grammar ¹	.36**	.30*
Oral communication ¹	.08	-.17
Problem-solving	.54**	.38**
Supervision	.36**	.09
Interpersonal	.41**	.14
Work Habits	.32*	.13

Notes: * indicates statistical significance at the .05 level.

** indicates statistical significance at the .01 level.

¹ these were included as components of Interpersonal Skills.

rated as having higher Management Potential by the assessment centre were likely to be paid more, be younger, had spent less time on their current job, had been with the department a shorter period of time, had more education, were better writers, had higher scores on problem-solving, supervision, and interpersonal relations, and had better work habits. Those rated as having higher Management Potential by the department were likely to be paid more, be younger, had less time time on their current job, had more education, had higher MPAS results 1987-88, and had higher scores on grammar and problem-solving.

Specific Research Question 10

What differences exist between the means of selected demographic variables and ratings by senior managers in 1990 on selected Skill, Knowledge and Performance variables, and earlier MPAS assessments, for the sample and other departmental managers?

In this section, the data were examined to determine on the basis of the variables involved in this study whether characteristics which discriminate between high and low potential managers can be identified.

In Table 26, a comparison is made between the managers in the assessment centre sample and the remaining departmental managers. Unlike the comparisons done earlier, there was no overlap between the two groups. A *t*-test between independent groups was conducted to determine if the two groups differed on any of the variables measured by this study.

The results showed statistically significant differences on six variables. First, the sample managers tended to be younger (mean of 39 years vs. 43 years) than their counterparts. Also, the sample managers

Table 26

Means of Selected Demographic Variables and Ratings by Senior Managers
in 1990 for Sample and Other Department Managers

Variable	Sample (n=82)	Other Department Managers (n=99)	Value of <i>t</i>
Salary	\$43,328	\$43,342	-0.02
Age	39.02	43.34	-4.60**
Time on job	2.47	3.11	-1.54
Length of service	11.04	12.43	-1.69
MPAS 86-87 ^a	3.12	3.07	1.01
MPAS 87-88 ^a	3.09	3.01	1.71
Written communication ^b	1.91	1.80	1.16
Written content ^b	2.05	1.94	1.34
Written organization ^b	1.96	1.84	1.44
Grammar ^b	2.10	1.98	1.58
Oral communication ^b	2.13	1.89	1.40
Problem-solving ^b	2.22	1.90	3.34**
Supervision ^b	1.77	1.95	-1.81
Interpersonal ^b	2.07	1.84	2.94*
Work Habits ^b	2.18	1.84	3.52**
Management Potential ^a	3.54	3.08	2.23*

Notes: * indicates statistical significance at the .05 level.

** indicates statistical significance at the .01 level.

^a based on a five-point scale (1=unsatisfactory; 2=below average; 3=average; 4=above average; and, 5=outstanding).

^b based on a three-point scale (1=low; 2=medium; and 3=high).

were rated higher on Problem-solving, Interpersonal Skills, Work Habits, and Management Potential.

Summary of Results

Statistically significant associations ($p < .05$) were found between these variables:

1. Assessment centre Management Potential ratings and senior managers' ratings of Management Potential in the same year;
2. Assessment centre Management Potential ratings and senior managers' ratings of Management Potential two years later;
3. Senior managers' Management Potential ratings in 1988 and 1990; and
4. Inter-rater (senior managers') assessment of Management Potential.

The inter-rater reliability between the senior manager raters, in terms of number of statistically significant correlation coefficients, was highest when assessing Management Potential, followed by assessing Current Performance and Readiness for Promotion. The lowest level of agreement (reliability) was for the four Skills Areas, i.e., Interpersonal, Supervisory, Work Habits, and Problem-solving.

This study provided some evidence that the assessment centre method is a valid method for measuring Management Potential. Statistically significant correlations ($p < .05$) were obtained between the assessment centre Management Potential ratings and perception of Current Readiness for Promotion and Current Performance. As well, all seven members of the senior management team, who form the executive of the department, felt that 75% of the assessment centre Management

Potential ratings were valid. The *average* Current Performance ratings by the senior managers correlated more highly with assessment centre Management Potential ratings than did scores of *individual* senior managers and the assessment centre Management Potential ratings.

In summary, the data also showed that both demographic and skills factors had statistically significant associations with Management Potential in this organization. The high Management Potential managers in this study tended to be younger and better educated. They also tended to have better Communication, Problem-solving, Supervision, Interpersonal, and Technical Skills, as well as better Work Habits.

Discussion of Findings

This section provides a discussion of the findings of this research project. In addition, concerns of reliability and validity of performance measures as determined by the assessment centre and the senior management team, which rated the sample on a number of dimensions, are also discussed.

Reliability

This study examined two broad categories of reliability. One was the reliability or agreement among senior managers who were asked to evaluate the sample managers. The other measure was the consistency of evaluations between senior managers and the assessment centre.

Table 27 summarizes the data presented in Tables 13 to 20 in this chapter. From this table it can be seen that the degree of reliability as assessed by the Pearson correlation coefficient was very low for the Individual Skill Areas (Interpersonal, Supervisory, Work Habits, and

Table 27
Summary of Inter-rater Correlation Coefficients (1988 and 1990)

Variable	Number of statistically significant correlation coefficients	Total number of correlation coefficients	Range of statistically significant correlation coefficients
Interpersonal	4	21	.44 to .54
Supervisory	5	21	.34 to .57
Work Habits	3	21	.39 to .67
Problem-solving	3	21	.38 to .45
Management Potential	11	21	.39 to .67
Readiness for Promotion	7	21	.47 to .67
Current Performance	7	21	.41 to .66

Problem-solving). Out of a possible 21 times (see Table 13 to Table 16), there were statistically significant correlation coefficients only between 3 to 5 times. This means that the evaluating senior managers in this study tended not to agree as to individual manager Skills Levels.

However, on more global assessments there was moderate agreement. For variables such as Current Performance and Readiness for Promotion, there were statistically significant correlations 7 out of 21 times. For Management Potential, there were significant correlations 11 times. The other aspect which must be pointed out is that even when there is statistically significant correlations, the correlations were not high, ranging from about .34 to .67.

In summary, the inter-rater reliability for this group of senior managers is low for specific skill factors, and at best, modest, for more global assessments of potential, promotion, and performance.

A further analysis was conducted of the inter-rater reliability data to ascertain the extent to which differences existed between the ratings by individual senior managers. The results are shown in Table 28. Across the seven variables described above, the number of statistically significant correlations were counted up for each senior evaluating manager. As can be seen there are some rather dramatic differences. There was a higher level of agreement (statistically significant correlations) among four senior managers – Rater 1, Rater 2, Rater 5 and Rater 6. All these senior managers had line responsibilities at one time or another for the largest branch in this government department. Rater 7 was the human resources executive who did not directly supervise any of the managers. Rater 3 and Rater

Table 28
Number of Statistically Significant Inter-rater Correlation Coefficients
for Each Senior Evaluating Manager (1990)

Rater (senior manager)	Number of statistically significant correlation coefficients (out of 42)
1	19
2	13
3	4
4	0
5	16
6	19
7	6

4 were managers originally from another branch and did not have the same experiences with the sample managers. Also, in my opinion, these two senior managers had a different set of operating values which could possibly account for the lack of agreement with the other senior managers.

The other reliability measure computed from the available data was a test-retest reliability coefficient. This was a correlation between the senior managers' evaluation of Management Potential conducted in 1988 and repeated in 1990. The Pearson r of .54, which was statistically significant at the .01 level, indicated that there was moderate agreement on Management Potential over time by this group of evaluating managers.

Unfortunately, the data collected during this study did not allow for calculation of either test-retest reliability or inter-rater reliability for the assessment centre. The assessment process would need to be repeated on the same managers at a later date to obtain the test-retest measures. The reliability measures that could be computed were those comparing the assessment centre results with the evaluations of senior managers. This measure of reliability – sometimes called the alternative or equivalent form – makes the assumption that the two measurements were assessing similar underlying dimensions.

The first measure of this type was to compute the correlation between the 1988 assessment centre Management Potential ratings and the senior managers' Management Potential ratings done in 1988. Although the resulting correlation was statistically significant, it was low (.26). Comparing the assessment centre Management Potential

ratings with senior managers' ratings done two years later resulted in a higher statistically significant correlation of .47.

Finally, as shown in Table 23, the assessment centre scores for Individual Skills Areas were compared to the ratings of each manager. There were only six statistically significant correlation coefficients between the two assessment methods out of total of 35 coefficients. This could have occurred because the assessment centre was not measuring the same dimensions as were the senior managers, even though they were called the same thing. Another explanation may be that the assessors replied in different ways to rating scale of low, medium, and high. There was a higher level of agreement on the Management Potential scores.

These results are somewhat similar to the reliability findings for the senior managers. There was low reliability with respect to assessing Individual Skills Areas, but a somewhat higher level of reliability existed in terms of assessing Management Potential.

Is the assessment centre method more useful than using senior manager ratings? This study did not provide data to allow the question to be fully addressed. To do so would have required some form of test-retest measures based on the assessment centre experiences.

For the senior managers' evaluations, low reliability was evident in terms of assessing Individual Skills Areas such as Interpersonal Skills, Supervisory Skills, Work Habits, and Problem-solving. There was higher but still modest reliability when it came to assessing Management Potential, Readiness for Promotion, and Current Performance.

The assessment centre evaluations for Individual Skills Areas did not correlate with similar assessments of senior managers. There were statistically significant correlations between assessment centre Management Potential scores and those of senior managers. The reasons for the low correlations between the assessment centre and senior managers' ratings is unknown, but one possibility is the low inter-rater reliability scores found in the managers' evaluations.

Validity

Validity is an indication of the ability of a test or instrument to measure what it claims or was designed to measure. In this section the results of criterion-related validity are discussed. Criterion-related validity indicates the effectiveness of a test in predicting an individual's behavior in specified situations. For this purpose, performance on a test is checked against a criterion, i.e., a direct and independent measure of that which the test is designed to predict. In this study, the best example of the criterion was the manager's Current Performance. Each manager's Current Performance was rated by the senior managers as part of this study.

Is the assessment centre approach more valid than management ratings in predicting future performance? The data gathered in the study indicated that it is. Table 21 in this Chapter showed that the correlation between the mean Current Performance rating for each manager and the assessment centre ratings of Management Potential done two years earlier was .60 ($p < .01$). The correlation between mean Current Performance rating for each manager and senior managers' ratings done two years earlier was .43, still statistically significant but

considerably lower. The correlations between the assessment centre Management Potential ratings done in 1988 and the current sample managers' performance as rated by each senior manager were lower than for the mean performance rating. This may imply that the collective or composite performance ratings are a more stable measure of performance than are individual assessments by senior managers.

The predictive validity of both approaches was compared using another criterion – Readiness for Promotion. The detailed findings are shown in Table 19. Since the measure for Readiness for Promotion was in how many years would the manager be ready for promotion, the correlations would be negative, i.e., the higher the Readiness of Promotion, the sooner would the manager be ready for promotion.

A final, somewhat indirect, measure of validity was to ask the senior managers whether the prediction made by the assessment centre in 1988 was valid. These results were presented in Table 22. Overall, the senior managers agreed in 75% of the cases that the assessment centre predictions were valid. The two senior managers who had the lowest percentages of agreement that the assessment centre's ratings were valid were the same two individuals who most frequently had the lowest inter-rater reliability coefficients as discussed in the previous section, i.e., Rater 3 and Rater 4.

These findings confirm the findings of previous research. The assessment centre was perceived to be a generally valid approach for predicting future managerial performance. However, the question remains whether the validity results would have been better if the reliability among raters had been higher. If these measures could be

made more reliable, the predictive validity of assessment centre ratings would probably also be higher.

Characteristics of High Potential Managers

From the results presented in Table 25, several statistically significant correlation coefficients were obtained between selected variables and ratings of Management Potential. In terms of demographic variables, the managers deemed to have higher Management Potential by the assessment centre were paid more, were younger, had fewer years of experience on the job and with the Department, and were better educated. From a skills perspective, the higher potential managers had better skills in Written Communication, Problem-solving, Supervision, and Interpersonal Relationships, as well as better Work Habits. The senior managers saw Problem-solving and Interpersonal Skills as particularly important.

Summary of Discussion

This chapter summarized the data along with further observations and discussion. Inter-rater reliability was low for specific skill factors, and modest for more global assessment of Management Potential and Readiness for Promotion of the sample.

When comparisons were made between the assessment centre scores for specific skills ratings with ratings provided by senior managers, there were few statistically significant correlations. This could have occurred because the assessment centre was not measuring the same skills dimensions as were the senior managers, even though the terminology and operational definitions were the same. There were, however, statistically significant correlations between the assessment

centre ratings, Management Potential scores, and ratings by senior managers. This implied that collective or composite skill ratings may be more stable and easier to agree upon, as gross indicators of performance, than the specific skill assessments made by senior managers.

The characteristics of high Management Potential managers, from a skills perspective, included better abilities in Written Communications, Problem-solving, Supervision, Interpersonal Relationships, as well as better Work Habits. The findings of this study, as outlined in this chapter, were consistent with some of the previous research.

Chapter 6

SUMMARY, CONCLUSIONS, AND RECOMMENDATIONS

This chapter presents an overview to the study, a summary of the major findings, and implications of the findings for further research and practice. This chapter concludes with commentary on the general value and importance of the assessment centre method in organizational development.

Overview of the Study

This study examined the usefulness of the assessment centre method compared to evaluations by executive and senior managers in predicting management success of a sample population in a public sector organization. The study also attempted to identify the characteristics of individuals who possessed high management potential, and whether these characteristics could be measured and predicted by an assessment centre more reliably than by traditional methods.

This study also provided a comprehensive profile of the history and the international research literature pertaining to the assessment centre method. Included in this profile were discussions of the various purposes, designs, techniques, processes, limitations, advantages, and organizational adaptations of the assessment centre method.

The purpose of this study was to explore the extent to which the assessment centre method could be used as a predictor of management success. An ex post facto research design was used for the study of a number of variables and criterion measures that could not have been manipulated by the researcher. The major limitation with this research design was that the relationship of the independent and dependent

variables in this study could only be considered correlational and not causal. Correlational analyses conducted in this research did identify a number of variables related to the management potential of the personnel in the organization which was studied.

This study provided the following considerable information relevant to the general and specific research questions which guided the research. The general research question was "To what extent can the results of the assessment centre method be used as a predictor of management success in public sector organizations?" The study provided indications that the assessment centre showed that managers with high management potential had better written communication, problem-solving abilities, supervision, and interpersonal skills, as well as better work habits. However, to obtain adequate reliability measures for the sample population that was studied in the assessment centre would have required that the same sample managers be put through the same (or equivalent) assessment process again several years later. This could not be done and it was not part of the study design.

Nevertheless, the study did provide data to show that the traditional evaluation procedures used by this organization in assessing its managers were generally of low reliability. Assessment of management potential had the highest reliability, but the values of the coefficients were modest. Senior managers' assessments of individual skill categories such as interpersonal skills, supervisory skills, work habits, and problem-solving abilities had low inter-rater reliability. Anything that could be done to improve the reliability of these assessments – such as the on-going use of an assessment centre – would

do much to improve the evaluation and placement of personnel, and thus organizational performance. For example, the use of a well-designed and implemented assessment centre, which involves and trains senior managers in competent assessment skills, would do much to increase their consistency in both skills assessment and better identification of management potential.

The study findings also showed that the assessment centre approach was generally viewed by senior managers to be a "valid" predictor of future management performance. In addition, the assessment centre tended to be better at predicting future management performance than were senior managers' assessments. The predictive validity of the assessment centre could probably even be better if the reliability of the predictor and criterion variables were improved.

Correlational analyses conducted in this study identified a number of demographic and skill variables that were substantially related to management potential in this organization. The higher potential managers were younger and better educated. They were also paid more and had been with the organization and in their present positions for shorter periods of time than their colleagues. From a skills perspective, the higher potential managers were better writers, better speakers, and had better problem-solving, supervisory, interpersonal, and technical skills, as well as better work habits. All these variables can be, and were, measured by the assessment centre. Other important predictor variables which were not part of this study, may be identified for inclusion in later studies.

Major Findings

The main research question addressed in this thesis was to what extent the assessment centre method could be used as a predictor of management success in public sector organizations. This study provided support to what has been reported in the research – that the assessment centre method is perceived to be a valid approach to predicting management success. It also demonstrated that the assessment centre method appears to be a more useful selection procedure than other traditional approaches, but this conclusion was affected by the lack of consistency of assessments of performance by the seven senior management raters.

The other major findings of the study are summarized below:

- The assessments of management potential by the assessment centre correlated positively with the assessments by senior managers in 1988 and 1990.
- The distribution of perceptions of skill levels by the assessment centre and senior managers were similar for interpersonal skills and work habits but substantially different for supervisory skills and problem-solving skills.
- Possession of a ruthless, aggressive management style was seen by senior managers to be the essential ingredient for survival and success.
- The correlations between individual rater's assessment of readiness for promotion in 1990 and ratings of readiness for promotion of the assessment centre and department in 1988 varied considerably as they ranged from $-.17$ to $-.60$.

- The correlation between individual rater's assessments of current performance in 1990 and ratings of management potential by both the assessment centre and department in 1988 varied considerably as they ranged from -.09 to .56.
- The correlations between assessments of skill areas and management potential by the assessment centre and senior managers in 1990 varied considerably as they ranged from -.22 to .51.
- The correlations between ratings given senior managers for the four skill areas and management potential, readiness for promotion and current performance were all statistically significant ranging from .33 to .66 and -.49 to -.67.

Discussion and Conclusions

In the conceptual framework shown in Figure 2, that was derived in part from the framework developed by Genge (1991), the relationship among some of the variables identified in the literature review in Chapter 2 and those observed by the author, which have implications for practice, are identified. An essential part of this framework is the perceptual screen of senior managers by which perceptual inputs are accorded differential weights depending upon the values and beliefs of these senior managers. This was not researched in this study. In my experience, perceptions of senior managers powerfully influence decision making about personnel matters. That is, irrespective of many of the organizational factors as identified in Figure 2 – such as behavior of managers, position eligibility criteria, and previous performance history – the perceptual screen of senior managers heavily influences all eventual succession outcomes.

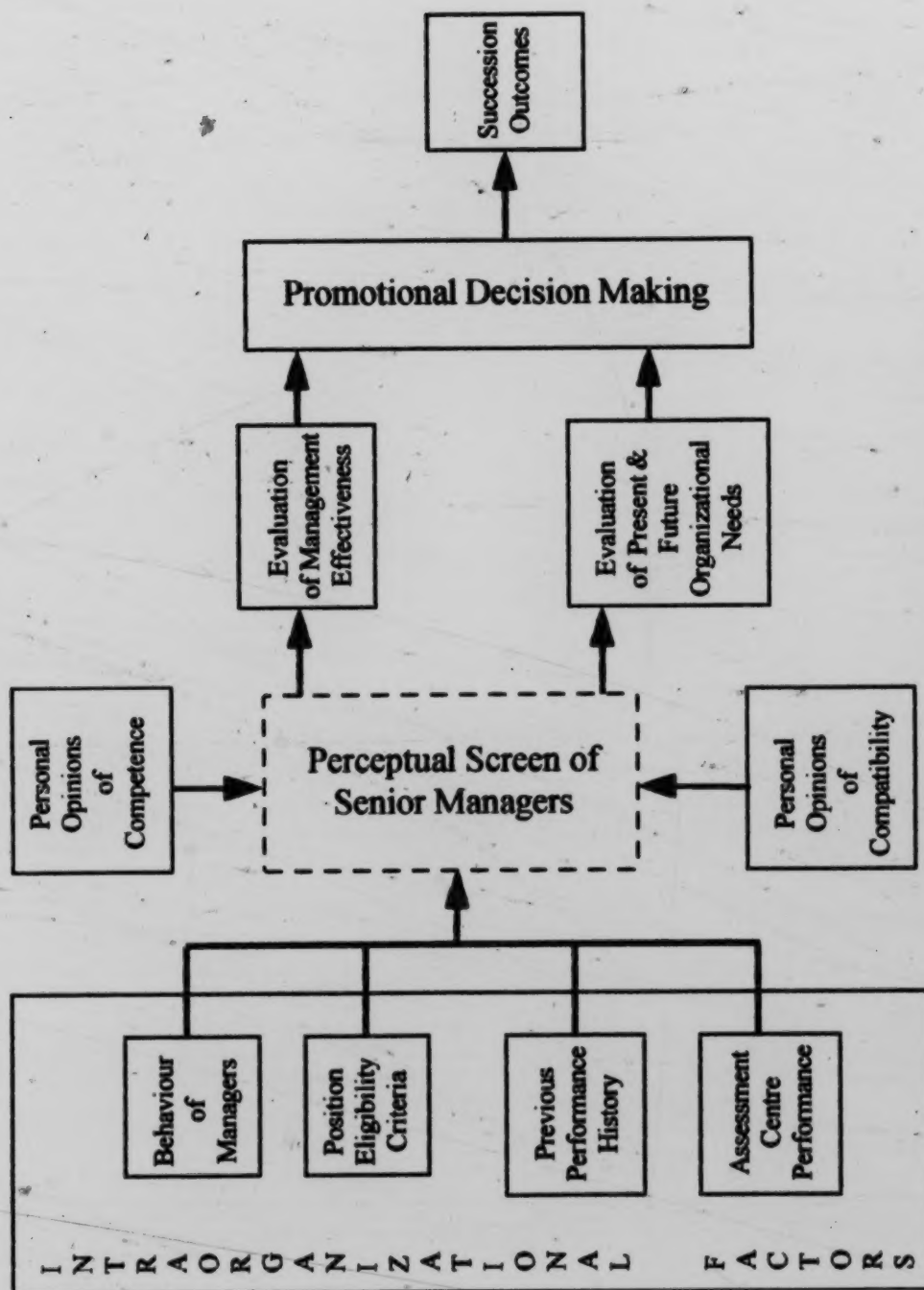


Figure 2. Relationships Between Intraorganizational Factors, Evaluation, and Succession Outcomes

The major factors contributing to the perceptual screen of senior managers are their own previously formed personal opinions of competence and of compatibility of management succession candidates. It has been my experience, as the branch manager of human resource development, that of these two previously mentioned contributing factors, personal opinions of compatibility are by far the most influential in determining and entrenching the perceptual screen of senior managers. For example, a succession candidate may be perceived as very competent but may be excluded from any promotional opportunities solely because his management style, according to the senior managers, may not be "a good fit" with the management team or with the specific senior manager in charge. Likewise, the personal opinions of compatibility, which primarily determine the perceptual screen of senior managers, will also subsequently affect the evaluations of managerial effectiveness, promotional decision-making, and the ultimate succession outcomes.

As valuable as the assessment centre approach can be for an organization, it is naive to assume that such programming can solve all of the personnel problems of an agency. Similarly, it is also naive to assume that any agency can totally eliminate the politics of power from a selection process, and that a completely objective personnel selection system can be devised.

The utility and influence of assessment centre performance, which is a critical organizational factor in the schema in Figure 2, lies in the fact that it provides senior managers with new, objective, and sufficient information to make better promotional decisions based on

functional job skills. This does not guarantee good management selection decisions, but it does make it harder to justify bad or alternative promotional decisions, based on the perceptual screen of senior managers, in the light of objective management data.

Within this framework of the relationship among intra-organizational factors, evaluation, and succession outcomes, performance in the assessment centre offers a more objective and defensible approach to the complex organizational problem of determining promotional and management succession.

This study found that the assessment centre evaluations of future management performance were perceived by senior managers to be a valid predictor and better than predictions made by senior managers. The study also confirmed what has been previously reported in the literature, that ad hoc management evaluations are notoriously unreliable. An important finding in this study was that senior managers' ratings of management potential were modestly reliable, but ratings of individual skill areas showed low reliability. This low reliability was obtained for skill areas which this study showed were important variables in identifying future management success, i.e., interpersonal skills, supervisory skills, problem-solving skills, and work habits. The assessment centre, with its structured and systematic approach to measuring critical skills, could do much to improve the reliability of these variables by developing better assessment skills in senior managers.

The assessment centre can effectively measure those variables that were found to be related to high management potential. However,

this aspect could be improved if the specific demographic and skill variables associated with effectiveness could be better identified. For example, education was found to be related to management potential. This study did not identify the type of education, the level of education, or other demographic aspects of the 82 managers in the sample. What is the ideal level of education for a high performance manager in this department? Also, there may be other important variables which were not included in this study. Should intelligence be assessed as well as other personality characteristics? Research which addresses these questions could improve the effectiveness of the assessment centre.

Based on the data provided by this study, I consider that the assessment centre process has great potential to improve the management of human resources in the public sector. More research is needed to identify the critical predictor and performance variables related to success in the public sector in the current environment. The identification, development, and placement of the right managers would do much to resolve the critical issues facing the public sector today.

Reflections and Recommendations for Practice

In my experience, the strongest advocates of the assessment centre process are the assesseees themselves who, having overcome the anxiety of nomination to the centre, became positive and active participants in accepting the testing challenges which were provided to them.

Based on my experience and on opinions and conclusions identified in the literature review in Chapter 2, I would offer the following additional process observations that might contribute

significantly to successful assessment centre implementation. These matters were not addressed in the data collection part of the study.

1. Ensure that an extensive program of education and involvement with operations and line management occurs well in advance of actual implementation in order to have the assessment process understood fully and for corporate "buy-in" to be achieved. The single most critical factor in successfully operationalizing and maintaining an assessment centre is top-level management support. Without this, there would be too much resistance, passive-aggressive responding, and limited commitment for follow-up resourcing by operations personnel.

2. Personnel branches can pose a significant stumbling block to successful assessment centre acceptance and resource support in an organization. In my experience, public sector personnel services staff are almost exclusively oriented to the traditional personnel gatekeeping functions and are most comfortable with antiquated, primary selection procedures. Traditional personnel gatekeepers, as opposed to human resource management professionals, are typically threatened by the assessment centre method. Personnel gatekeepers perceive the assessment centre as an approach which would cause them to lose control over their traditional areas of responsibility. Therefore, it is important to ensure that such personnel branches understand fully and support such an initiative, or at least, not attempt to hinder its full implementation.

3. There must be perceived rewards and positive outcomes for staff who comply with the assessment centre requirements. If

objectively evaluated staff do well at the assessment centre, remediate any development needs, and are passed over for promotion by less talented operational stalwarts, the process will be perceived as impotent and its credibility and momentum will be lost. Here again, it is critical to obtain full support from senior managers for successfully establishing a meaningful and credible assessment centre.

4. Other additional mechanisms must be built into the developmental process in order to gain a broader "buy-in" from line staff. A mentoring process, using competent line and executive managers who are paired with assessment candidates, can effectively accomplish some of the objectives of the centre.

5. The assessment centre must be constantly "given-away" and "owned" by assessees, management candidates, line personnel, and senior management. Allowing the broadest group of corporate constituents to make the assessment centre "their processes" maximizes the corporate commitment and support. Therefore, when implementing such an initiative the politics of inclusion must be practiced from the very beginning and throughout the life of the program.

The assessment centre method is not without imperfections, as no such process exists. The assessment centre method, however, when founded on a detailed job skills task analysis, using a broad range of well-designed exercises, and multiple sets of highly trained, competent managers as assessors is a far superior process to the alternative existing methods of staff selection.

Recommendations for Further Research

This study raised a number of questions about the use of assessment centre methodology in the public sector which could not be addressed by the data collected. Further research in this area is required to address the following questions:

1. *Can the results from this study be generalized to other public sector organizations?* This study should be replicated on broader samples of public sector organizations which include municipal governments, federal government departments, provincial government departments, crown corporations, and educational/health care institutions. The results would help to confirm whether the proposed model (Figure 1) will be successful in other public sector organizations, or only in those with certain characteristics. If the latter is found to apply, then what are the characteristics of public sector organizations that can improve management placement through the use of assessment centres?

2. *What is the impact of organizational culture on the evaluations made by the assessment centre of management potential?* What effect would a particular organizational culture have on use of the assessment centre approach in the public sector? Further research is required to determine whether the success factors identified and measured by assessment centre methodology take into account the organizational culture and other intangible, but potentially important, variables.

3. *What other variables can be used to measure and predict management performance and potential?* This study examined only a limited number of factors. Additional research is required to identify

other demographic, knowledge, skill, competency, psychological, and attitudinal factors that may be valid predictors of public sector management success. Research is also required to determine which of these other factors could be incorporated into the assessment centre approach.

4. *Are there more reliable and valid measures of management success than those typically determined by supervisors?* This study was very narrow in its measurement of management performance – evaluation by senior managers. Further research is needed to develop multivariate and composite measures of managers' performance in the public sector. For example, some other measures could include rate of promotion, turnover, and independent/objective measures of a manager's success in achieving clearly defined unit and organizational objectives and targets. These improved performance measures would enable researchers to better validate the use of assessment centre methodology in the public sector.

5. *What is the impact of organizational policies, procedures, and past practices on the assessment of management potential?* Research is needed to identify consequences of traditional practices for management evaluation and placement to determine how the assessment centre methodology can be used to improve the process.

6. *What is the impact of interpersonal factors and past working relationships on the assessment of management potential?* This research relied heavily on senior managers' assessment of the study participants. No doubt these evaluations were influenced by personal relationships and past experiences between each manager and the evaluating senior

manager. It would be useful to identify, measure, and evaluate the impact of these variables on assessment of "true" management performance and potential. Are these personal factors important to the success of a manager in the organization? Can and/or should the assessment centre approach take these factors into account?

7. *What is the most cost-effective method of applying assessment centre methodology in the public sector?* This study concluded that the assessment centre approach can improve the selection and placement of managers in the public sector. However, it did not describe how such a program can or should be implemented. Further research is required to identify the critical organizational, political, policy and human resource issues that need to be addressed if this model is to be successfully implemented in the public sector. Provision of a second set of assessment centre data about participants, collected possibly two years after the first set, would be an important addition to the approach used in this study.

Concluding Statement

The notion of the effectiveness, validity, and reliability of the assessment centre approach has been a focus of interest of many researchers, as well as large public and private sector organizations. In the educational setting, a long-term and major commitment has been made in the United States by the establishment of the NASSP initiative. This nationally recognized program has played a significant role in the selection and development of secondary school principals in many jurisdictions in the United States over the last 20 years. Similarly, a substantial number of the major players in the American corporate

sector have, for several decades, embraced the assessment centre method as a primary tool for managerial selection and executive succession.

The research literature on the assessment centre approach has, for the most part, concluded that rigorously developed and competently implemented programs show high levels of predictive accuracy in relationship to managerial performance and success. In addition, as indicated in this study, the assessment centre can also be incorporated as part of a much broader human resource development strategy. This comprehensive human resource development approach includes the diagnosis of training needs, planning developmental programming, and building effective management teams. Other important ancillary benefits of the assessment centre allow for participants to gain important insights into managerial competencies and their personal development requirements.

The subtleties of the assessment centre approach are complex and there is still much to learn about what attributes it actually measures. As with any evolving measurement procedure, the knowledge base is constantly changing as sophistication improves and evidence accumulates.

The main general contribution of this study was that it improved our knowledge concerning some of the characteristics and differences between high and low performing managers in a particular public service organization. Its theoretical contribution may be that it provided some insights into the subtle influences that can determine the

acceptance and success of the assessment centre approach in the public sector.

References

- Aaron, K. J., & Shore, L. (1990). Effective selection is not just for big business. Business, 40, 51-54.
- Adler, S. (1978). Using assessment centers in smaller organizations. Personnel Journal, 57 (9), 484-487.
- Adler, Z. (1990). Hill Street Clues: The US police record on promoting women. Personnel Management, 22, 28-33.
- Allison, D. J. (1989). Assessing principal assessment centres. The Canadian Administrator, 28 (6), 1-8.
- Anastasi, A. (1971). Psychological testing. London: Macmillan.
- Anderson, N., & Shackleton, V. (1988). The chosen few. Management Today, November, 133-138.
- Anderson, N., & Shackleton, V. (1990). Staff selection decision making in the 1990s. Management Decision, 28, 5-8.
- Anderson, N., Payne, T., Ferguson, E., & Smith, T. (1994). Assessor decision making information processing and assessor decision strategies in a British assessment centre. Personnel Review, 23, 52-62.

Ansbacher, J. L. (1941). German military psychology. Psychological Bulletin, 38, 370-392.

Appelbaum, S., Kay, F., & Shapiro, B. (1989). The assessment centre is not dead – How to keep it alive and well. Journal of Management Development, 8 (5), 51-65.

Assessment centres help target employees for management selection (1993). Personnel Journal, 72, 95-105.

Bartz, D., & Calabrese, R. (1991). Enhancing graduate business school programs. Journal of Management Development, 10, 26-32.

Beard, D., & Lee, G. (1990) Improved connections at BTs development centres. Personnel Management, 22, 61-63.

Bentz, B. J. (1971). Validity of Sears' assessment center procedures. Symposium presented at the 79th annual convention of the American Psychological Association. Washington, DC.

Berkay, P. (1993). The adaptation of assessment centre group exercises for deaf job applicants. Journal of the American Deafness and Rehabilitation Association, 27 (1), 16-24.

Blaney, D., Hobson, C., Meade, M., & Scordro, J. (1993). The assessment centre: Evaluating managerial potential. Nursing Management, 24, 54-58.

Blanksby, M., & Iles P. (1990). Recent developments in assessment centre theory, practice and operation. Personnel Review, 19, 33-34.

Boche, A. (1973). Management assessment in international organizations. Industrial Relations, 12 (2), 172-182.

Boche, A. (1977). Management concerns about assessment centres. In J. L. Moses & W. C. Byham (Eds.), *Applying the assessment centre method* (pp. 242-250). New York: Pergamon.

Boreham, T. (1993). Accountancy: How Andersen binds its people. BRW (national edition), 3, 71-72.

Borg, W. R., & Gall, M. D. (1983). Educational research: An introduction. New York: Longman.

Bray, D. W., (1964). The management progress study. American Psychologist, 19, 419-429.

Bray, D. W., & Grant, D. L. (1966). The assessment center in the measurement of potential for business management. Psychological Monographs, 80 (27), 1-27.

Bray, D. W., & Campbell, R. J. (1968). Selection of salesmen by means of an assessment center. Journal of Applied Psychology, 52, 36-41.

Bray, D. W. (1976). The assessment center method. In R. L. Craig (Ed.), Training and development handbook. (pp. 16:1-15). New York: McGraw-Hill.

Bycio, P., Alvares, K. M., & Hahn, J. (1987). Situational specificity in assessment centre ratings: A confirmatory factor analysis. Journal of Applied Psychology, 72 (3), 463-474.

Byham, W. C. (1977). Application of the assessment centre method. In J. L. Moses & W. C. Byham (Eds.), Applying the assessment centre method (pp. 31-43). New York: Pergamon.

Byham, W. C. (1978). How to improve the validity of the assessment centre. Training and Development, 32 (11), 4-6.

Byham, W. C. (1980). Starting an assessment centre ... the correct way. Personnel Administrator, 25 (2), 27-32.

Campbell, R., & Bray, D. (1993). Use of an assessment centre as an aid in management selection. Special Issue: Innovations in research methods for field settings. Personnel Psychology, 46 (3), 691-699.

- Castetter, W. B. (1992). The personnel function in educational administration (5th ed.) New York: MacMillan.
- Chadwick, J. (1988). Educating small business. Director, 42 (3), 141-145.
- Cigler, B. (1990). Integrated written and oral assignments for the MPA curriculum. International Journal of Public Administration, 13, 325-342.
- Clarke, L. (1993). The finding out game. Training Tomorrow, 17-18.
- Coaley, K., Knightley, R., & Beard, D. (1993). The identification of management potential. Executive Development, 6, 7-8.
- Cohen, B. M., Moses, J. L., & Byham, W. C. (1974). The validity of assessment centers: A literature review. Pittsburgh, PA: Development Dimensions.
- Cohen, S. L. (1980a). Validity and assessment center technology: One and the same? Human Resource Management, 19 (4), 2-11.
- Cohen, S. L. (1980b). The bottom line on assessment centre technology, Personnel Administrator, 25 (2), 50-56.

- Constable, A. (1993). Bridging the gap, linking assessment to development. International Journal of Career Management, 5, i-ii.
- Cook, R., & Herche, J. (1992). Assessment centres: An untapped resource for global salesforce management. Journal of Personal Selling & Sales Management, 12, 31-38.
- Crawley, B., Pinder, R., & Herriot, P. (1990). Assessment centre dimensions, personality and aptitudes. Journal of Occupational Psychology, 63 (3), 211- 216.
- Cummings, L. & Schwab, D. P. (1973). Performance in organizations: Determinants and appraisal. Glenview, IL: Scott Foresman.
- Dalziel, S., McDougall, M., Barclay, J., & Nimmo, R. (1993). Introducing development centres into management education: The way forward?. Management Education & Development, 24, 280-292.
- Department of Education and Science. (1991). School teacher appraisal. Circular No. 12/91 (24 July). London, England.
- Dicken, C., & Black, J. (1965). Predictive validity of psychometric evaluations of supervisors. Journal of Applied Psychology, 49, 34-47.

Dodd, W. E (1977). Attitudes toward assessment center programs. In J. L. Moses & W. C. Byham (Eds.), Applying the assessment center method (pp. 161-183). New York: Pergamon.

Duggan, G. (1993). Assessment centres. Training Tomorrow, 31-33.

Durkan, P., Harrison, R., Lindsay, P., & Thompson, E. (1993). Competence and executive education and development in an SME environment. IBAR, 14, 65-80.

Ebel, R. L. (1977). Prediction? Validation? Construct validity? Personnel Psychology, 30, 55-63.

EFQM viewpoint: Assessor training (1993). TQM Magazine, 5, 7-8.

Farago, L., & Gittler, L. F. (1941). German psychological warfare: Survey and bibliography. New York: Committee for National Morale.

Fedor, D. B. & Buckley, M. R. (1988). Issues surrounding the need for more frequent monitoring of individual performance in organizations. Public Personnel Management, Winter, 435-442.

Feltham, R. (1988). Assessment decision making: Judgmental vs. mechanical. Journal of Occupational Therapy, 61 (3), 237-241.

- Finkle, R. B. (1976). Managerial assessment centers. In M. D. Dunnette (Ed.), Handbook of industrial and organizational psychology (pp. 261-282). Chicago: Rand McNally.
- Finley, R. M. (1970). An evaluation of behavior predictions from projective tests given in a management assessment center. Paper presented at the 78th annual convention of the American Psychological Association. Miami Beach, FL.
- Fisher, R. (1992). Screen test. Canadian Business, 65, 62-64.
- Fletcher, C., (1991). Candidates' reactions to assessment centres and their outcomes: A longitudinal study. Journal of Occupational Psychology, 64 (2), 117-127.
- Fletcher, C., & Kerslake, C. (1993). Candidate anxiety level and assessment centre performance. Journal of Managerial Psychology, 8, 19-23.
- Fletcher, C., & Kerslake, C. (1992). The impact of assessment centres and their outcomes on participants' self assessments. Human Relations, 45 (3), 281-289.
- Fleisch, J. M., & Leyden, J. J. (1989). Cost-effective alternatives to the assessment center at Pratt and Whitney. Symposium presented at the

17th International Congress on the Assessment Center Method.
Pittsburgh, PA.

Ford, R. (1993). Successful assessment. Training Tomorrow, 23-24.

Frechette, H. M. & Wertheim, E. G. (1985). Performance appraisal. In
W. R. Tracy (Ed.), Human resource management and development
handbook (pp. 218-243). New York: Amacon.

'Front line' staff selected by assessment centre (1993). Personnel
Management, 25, 83.

Gall, M.D., Borg, W. R., & Gall, J. P. (1996). Educational research: An
introduction. New York: Longman.

Gatewood, R., Thornton, G. C., & Hennessey, H. W. (1990). Reliability of
exercise ratings in the leaderless group discussion. Journal of
Occupational Psychology, 63 (4), 331-342.

Gaugler, B. B., Rosenthal, D. B., Thornton, G. C., & Bentson, C. (1987).
Meta-analysis of assessment centre validity. Journal of Applied
Psychology, 72 (3), 493-511.

Gaugler, B., & Rudolph, A. S., (1992). The influence of assessee
performance variation on assessors' judgments. Personnel Psychology,
45 (1), 77-98.

- Gaugler, B., & Thornton, G. C. (1989). Number of assessment centre dimensions as a determinant of assessor accuracy. Journal of Applied Psychology, 74 (4), 611-618.
- Gaugler, B., Rosenthal, D. B., Thornton, G. C., & Bentson, C. (1987). Meta analysis of assessment centre validity. Journal of Applied Psychology, 72 (3), 493-511.
- Genge, A. (1991). Effective school superintendents. Unpublished doctoral thesis, University of Alberta, Edmonton, AB.
- George, D., & Smith, M. C. (1990). An empirical comparison of self assessment and organizational assessment in personnel selection. Public Personnel Management, 19 (2), 175-190.
- Glasman, N., & Heck, R. (1992). The changing role of the principal: Implications for principal assessment. Peabody Journal of Education, 68(1), 5-24.
- Gledhill, M. (1992). Can training and assessment centres meet the human resources needs of the 1990s? Some issues in police development and training. Leadership and Organization Development Journal, 13, iii-vi.

- Goodge, P. (1988). Task-based assessment. Journal of Industrial Training, 12 (6), 22-27.
- Goodge, P. (1991). Development centres: Guidelines for decision makers. Journal of Management Development, 10, 4-12.
- Goodge, P. (1994a) Development centres: Clues to effectiveness. Management Research News, 17, 17-22.
- Goodge, P. (1994b). Development centres: Design generation and effectiveness in businesses. Journal of Management Development, 13, 16-22.
- Gorden, R. L. (1975). Interviewing: Strategy techniques and tactics. Homewood, IL: Dorsey.
- Graduate recruitment survey: Vacancies, salaries and prospects (1992). Industrial Relations Review & Report, 524, SSSS2-SSSS10.
- Grant, K. W., & Slivinski, L. W. (1970). The assessment centre approach. Ottawa, ON: Queen's Printer.
- Greenwood, J. M., & McNamara, W. J. (1967). Interrater reliability in situational tests. Journal of Applied Psychology, 31, 101-106.

- Griffiths, P., & Goodge, P. (1994). Development centres: The third generation. Personnel Management, 26, 40-43.
- Guerrier, Y., & Riley, M. (1992). Management assessment centre as a focus for change. Personnel Review, 21, 24-31.
- Guion, R. M. (1977). Content validity – the source of my discontent. Applied Psychological Measurement, 1, 1-10.
- Guion, R. M. (1978). Content validity in moderation. Personnel Psychology, 31, 205-214.
- Halpert, J. A., Wilson, M. L., & Hickman, J. L. (1993). Pregnancy as a source of bias in performance appraisals. Journal of Organizational Behavior, 14 (7), 649-663.
- Harris, M., Becker, A. S., & Smith, D. E. (1993). Does the assessment centre scoring method affect the cross situational consistency of ratings? Journal of Applied Psychology, 78 (4), 675-678.
- Harrison, J., Stuart, R. (1993). The generalisability of competency frameworks. IBAR, 14, 12-18.
- Heck, R., and Marcoulides, G. (1992). Principal assessment: Conceptual problem, methodological problem, or both? Peabody Journal of Education, 68(1), 124-144.

- Hemmelgarn, A. L., James, L. R., Ladd, R. T., & Mitchell, T. R. (1995). Testing for cross situational consistency: a confirmatory factor analytic approach. Journal of Management, 21, 121 - 139.
- Hemphill, J. K., Griffiths, D. E., and Frederiksen, N. (1962). Administrative performance and personality: A study of the principal in a simulated elementary school. New York: Columbia University Teachers College.
- Hendricks, S. O., & Ogborn, S. E. (1990). Supervisory and managerial assessment centres in health care. Health Care Supervisor, 8, 65-75.
- Highhouse, S., & Harris, M. M. (1993). The measurement of assessment centre situations: Bem's template matching technique for examining exercise similarity. Journal of Applied Social Psychology, 23 (2), 140 - 155.
- Howard, A. (1974). An assessment of assessment centres. Academy of Management Journal, 17, 115-134.
- Huck, J. R., & Bray, D. W. (1976). Management assessment center evaluations and subsequent job performance of white and black females. Personnel Psychology, 2, 13-30.

Iles, P. (1992). Centres of excellence? Assessment and development centres, managerial competence, and human resource strategies. British Journal of Management, 3, 79-90.

Jacobs, R. (1989). Getting the measure of management competence. Personnel Management, 21 (6), 32-37.

Jaffee, C. L., & Cohen, S. L. (1980). Improving human resource effectiveness through assessment center technology: Emergence, design, application and evaluation. In E. L. Miller, E. H. Burack, & M. H. Albrecht (Eds.), Management of human resources (pp. 172-187). Englewood Cliffs, NJ: Prentice-Hall.

Jaffee, C. L., Frank, I. D., & Preston, J. R. (1985). Assessment centers. In W. R. Tracy (Ed.), Human resources management and development handbook (pp. 575-590). New York: Amacom.

Jones, A., Herriot, P., Long, B., & Drakeley, R. (1991). Attempting to improve the validity of a well established assessment centre. Journal of Occupational Psychology, 64 (1), 1-21.

Joyce, L. W., Thayer, P. W., & Pond, S. B. (1994). Managerial functions: An alternative to traditional assessment centre dimensions? Personnel Psychology, 47 (1), 109 - 121.

- Keel, S. B., Cochran, D. S., Arnett, K., & Arnold, D. R. (1989). Assessment centres are not just for the big guys. Personnel Administrator, 34(5), 98-101.
- Kerlinger, F. (1973). Foundations of behavioral research. New York: Holt, Rinehart & Winston.
- Kerlinger, F. (1979). Behavioral research. New York: Holt, Rinehart & Winston.
- Kirksey, J., & Zawacki, R. A. (1994). Assessment centre helps find team oriented candidates. Personnel Journal, 73, 92.
- Kleinmann, M. (1993). Are rating dimensions in assessment centres transparent for participants? Consequences for criterion and construct validity. Journal of Applied Psychology, 78, 988-993.
- Klimoski, R. J., & Strickland, W. J. (1977). Assessment centres: Valid or merely prescient? Personnel Psychology, 30, 353-361.
- Knightley, R. (1992). Ringing the changes: BT's use of development centres in redeployment. Journal of European Industrial Training, 16, 17-19.
- Kraut, A. I. (1972). A hard look at management assessment centers and their future. Personnel Journal, 51, 317-326.

- Lane, J. (1992). Methods of assessment. Heath Manpower Management, 18, 4-6.
- Laser, S. A. (1988). Career development in a changing environment. Journal of Managerial Psychology, 3 (2), 23-25.
- Leatherman, D. (1990). Sacred cows of assessment. Executive Excellence, 7, 12-13.
- Lee, G., & Beard, D., (1994). Development centres. Training & Management Development Methods, 8, 201-208.
- Leim, M. A., & Slivinski, L. W. (1972). A comparative study of managerial job dimensions and job types of middle and senior management in the Canadian public service. Ottawa, ON: Queen's Printer.
- Littlefield, D. (1995). Menu for change at Novotel. People Management, 1, 34-36.
- Lowry, P. (1991). The assessment centre: Reducing inter-assessor influence. Public Personnel Management, 20 (1), 19-26.
- Lowry, P. (1992). The assessment centre: Effects of varying consensus procedures. Public Personnel Management, 21 (2), 171-183.

- Lowry, P. (1993). The assessment centre: An examination of the effects of assessor characteristics on assessor scores. Public Personnel Management, 22, 487-501.
- Lowry, P. (1994a). Selection methods: Comparison of assessment centres with personnel records evaluations. Public Personnel Management, 23, 383 - 395.
- Lowry, P. (1994b). The structured interview: An alternative to the assessment centre? Public Personnel Management, 23, 201-215.
- Macan, T., Avedon, M., Paese, M., & Smith, D. (1994). The effects of applicants' reactions to cognitive ability tests and an assessment centre. Personnel Psychology, 47, 715-738.
- MacKinnon, D. W. (1975). An overview of assessment centers. University of California, Berkeley: Center for Creative Leadership.
- Maher, P. T. (1983). An analysis of common centre dimensions. Journal of Assessment Centre Technology, 6 (3) 1-8.
- Margerison, C. (1992). Managing your movers, shakers and high flyers. Target Management Development Review, 5, 22-26.

McDonald, G. (1993). ET go home – the successful management of expatriate transfers. Journal of Managerial Psychology, 8, 18-29.

McLoskey, J. L., Slivinski, L. W., & Bourgeois, R. P. (1980). Identification of senior executive potential through an assessment centre. Ottawa, ON: Queen's Printer.

McMahon, J. (1992). Teaching management to MBA students: The issue of pedagogy. Journal of Managerial Psychology, 7, 21-24.

McNutt, K. (1979). Behavioral consistency and assessment centers: A reconciliation of the literature. Journal of Assessment Center Technology, 2, 1-6.

Mitchell, J. O. (1975). Assessment center validity: A longitudinal study. Journal of Applied Psychology, 60, 573-579.

Moorhead, G. & Griffin, R. W. (1992). Organizational behavior. Boston: Houghton Mifflin.

Morrow, P. C., McElroy, J. C., Stamper, B. G., & Wilson, M. A. (1990).^c The effects of physical attractiveness and other demographic characteristics on promotional decisions. Journal of Management, 16 (4), 723 - 736.

Moser, C. A. (1958). Survey methods in social investigation. London: William Heinemann.

Moses, J. L. (1973). Assessment center performance and management progress. Studies in Personnel Psychology, 26, 569-580.

Moses, J. L., & Boehm, V. R. (1975). Relationship of assessment center performance to management progress for women. Journal of Applied Psychology, 60, 527-529.

Moses, J. L., & Byham, W. C. (1977). Applying the assessment center method. New York: Pergamon.

Mumford, M. D., Gessner, T. L., Connelly, M. S., & O'Connor, J. A., et al. (1993). Leadership and destructive acts: Individual and situational influences. Leadership Quarterly, 4 (2), 115 - 147.

Munchus, G., III., & McArthur, B. (1991). Revisiting the historical use of the assessment centre in management selection and development. Journal of Management Development, 10, 5 - 13.

Nesbitt, K. W. (1992). Literature review of assessment centre process with special reference to antarctic station leader selection (Tech Report 3). Australian Army Psychology Corps First Psychological Research Unit Report. 92-24.

- Neubauer, R. (1990). Women in the career assessment centre – a victory? Symposium presented at the 18th International Congress of the Assessment Centre Method. Pittsburgh, PA.
- Newton, T. J. (1994). Discourse and agency: The example of personnel psychology and assessment centres. Organizational Studies, 15, 879-902.
- Nosin, J. A. (1987). Assessment centers and staff development. Georgia Merit System Training Newsletter (February), 4.
- Nosin, J. A. (1988). Assessment centers for management selection. Unpublished monograph. Atlanta, GA: Government of Georgia.
- Osbaldeston, G. F. (1989). Keeping deputy ministers accountable. Toronto: McGraw-Hill Ryerson.
- Parker, T. C. (1980). Assessment centers: A statistical study. Personnel Administrator, 25 (2), 65-67.
- Pashiardis, P. (1993). Selection methods for educational administrators the USA. International Journal of Educational Management, 7, 27-35.
- Payne, T., Anderson, N., & Smith, T. (1992). Assessment centres, selection systems and cost effectiveness: An evaluation case study. Personnel Review, 21, 48-56.

- Pickard, J. (1990). Michael Osbaldeston: Chief Executive, Ashridge Management College. Personnel Management, 22, 26-27.
- Plumptre, T. W. (1988). Beyond the bottom line: management in government. The Institute for Research on Public Policy. Halifax, NS.
- Pultz-Osterlow, W., & Schroiff, M. (1989). Complex behavioral measures for addressing giftedness. Symposium presented at the 17th International Congress of the Assessment Centre Method. Pittsburgh, PA.
- Pynes, J., & Bernardin, H. J., (1989). Predictive validity of an entry level police officer assessment centre. Journal of Applied Psychology, 74 (5), 831-833.
- Pynes, J., & Bernardin, H. J., (1992). Mechanical vs. consensus derived assessment centre ratings: a comparison of job performance validities. Public Personnel Management, 21, 17-28.
- Randall, E. J. (1990). Selecting that successful salesperson. Review of Business, 12, 19-24.
- Rayner, R., & Goodge, P. (1988). New techniques in assessment centres: LRT's experience. Journal of Management Development, 7 (4), 21-30.

- Rea, P., Rea, J., & Moomaw, C. (1990). Use assessment centres in skill development. Personnel Journal, 69, 126-131.
- Reilly, R., Henry, S., & Smither, J. W. (1990). An examination of the effects of using behavior checklists on the construct validity of assessment centre dimensions. Personnel Psychology, 43 (1), 71-84.
- Richardson, S. A., Dohrenwend, B. S., & Klein, D. (1965). Interviewing: Its forms and functions. New York: Basic.
- Ritchie, R. J. (1994). Using the assessment centre method to predict senior anagement potential. Special issue: Issues in the assessment of managerial and executive leadership. Consulting Psychology Journal Practice and Research, 46 (1), 16-23.
- Robertson, I., Gratton, L., & Sharpley, D. (1987). The psychometric properties and design of managerial assessment centres: Dimensions into exercises won't go. Journal of Occupational Psychology, 60 (3), 187-195.
- Ross, J. D. (1979). A current review of public sector assessment centers: Cause for concern. Public Personnel Management, 8, 41-46.
- Rowe, C. (1994). Picking the winners: The thorny issue of assessing leadership potential. Leadership & Organization Development Journal, 15, 1-4.

Rudner, L. M. (1994). Pre-employment testing and employee productivity. Public Personnel Management, 21, 133-150.

Russell, C. J., & Domm, D. (1995). Two field tests of an explanation of assessment centre validity. Journal of Occupational & Organizational Psychology, 68, 25-47.

Sackett, P. R. (1982). A critical look at some beliefs about assessment centers. Public Personal Management Journal, 2, 140-147.

Sanniti, K., J., McAliley, L. G., Urbancic, C. J., Ivons, D. A., Frankowski, S. J., & Soltysiak, V. E. (1990). Selection, promotion and development of employees. Nursing Management, 21, 30 - 40.

Schmitt, N., & Noe, R.A. (1983). Demonstration of content validity: Assessment centre example. Journal of Assessment Centre Technology, 6, 5-10.

Schmitt, N., Schneider, J. R., & Cohen, S. A. (1990). Factors affecting validity of a regionally administered assessment centre. Personnel Psychology, 43 (1), 1-12.

Schneider, J. R., & Schmitt, N. (1992). An exercise design approach to understanding assessment centre dimension and exercise constructs. Journal of Applied Psychology, 77 (1), 32-41.

Shectman, Z., & Sansbury, D. (1989). Validation of a group assessment procedure for the selection of teacher-education candidates. Educational and Psychological Measurement, 49, 653-661.

Shectman, Z. (1992a). A group assessment procedure as a predictor of on-the-job performance of teachers. Journal of Applied Psychology, 77, 383-387.

Shectman, Z. (1992b). A revised group assessment procedure for predicting initial teacher success. Educational and Psychological Measurement, 51, 963-974.

Shore, T. H., Thornton, G. C., & Shore, L. M. (1990). Construct validity of two categories of assessment centre dimension ratings. Personnel Psychology, 43 (1), 101-116.

Shore, T. H. (1992). Subtle gender bias in the assessment of managerial potential. Sex Role, 27 (9-10), 499-515.

Shore, T. H., Shore, L. M., & Thornton, G. C. (1992). Construct validity of self and peer evaluations of performance dimensions in an assessment centre. Journal of Applied Psychology, 77 (1), 42-54.

Slivinski, L. W., Yan, T. R., Richter, I. L., McDonald, V. S., & Bourgeois, R. P. (1977). Reactions to an assessment centre. Ottawa, ON: Queen's Printer.

Smith, E. A. (1990). Finding personal productivity information: It's a matter of where you look. Industrial Management, 32, 14-18.

Sowell, E. J., & Casey, R. J. (1982). Analyzing educational research. Belmont, CA: Wadsworth.

Steuer, E. (1992). Assessment centre simulation: A university training program for business graduates. Simulation and Gaming, 23 (3), 354-369.

Thatcher, M. (1993). Kate Tyzack Case Study. Personnel Management, 25, 20-21.

Thomson, H. A. (1970). A comparison of predictor and criterion judgments of managerial performance using the multitrait-multimethod approach. Journal of Applied Psychology, 54, 496-502.

Thorndike, R. L. (1988). Reliability. In J. P. Keeves (Ed.) Educational research, methodology and measurement (pp. 330-343). New York: Pergamon Press.

Thornton, G. C., & Byham, W. C. (1982). Assessment centers and managerial performance. Orlando, FL: Academic Press.

Tziner, A., Meir, E. I., Dahan, M., & Birati, A. (1994). An investigation of the predictive validity and economic utility of the assessment centre for the high management level. Canadian Journal of Behavioral Science, 26 (2), 228-245.

Tziner, A., Ronen, S., & Hacohen, D. (1993). A four year validation study of an assessment centre in a financial corporation. Journal of Organizational Behavior, 14, 225-237.

Veir, C. (1993). Gender and race differentiations among applicants in educational leadership programmes: Multivariant strategies for equity. Journal of Educational Administration, 31, 67-79.

Weislogel, R. L. (1954). Development of situational test for military personnel. Personnel Psychology, 7, 492-497.

Wendel, F. C., & Sybouts, W. (1988). Assessment center methods in educational administration: Past, present and future. Tempe, AZ: University Council for Educational Administration.

Whitney, K., Sagrestano, L. M., & Maslach, C. (1994). Establishing the social impact of individuation. Journal of Personality and Social Psychology, 66 (6), 1140-1153.

- Wilson, J., & Goldsmith, R. (1989). How cost effective is assessment at the employee level? Symposium presented at the 17th International Congress on the Assessment Center Method. Pittsburgh, PA.
- Winter, B. (1995). Assessment centres: Keeping up with and getting ahead of changing organizations. Journal of European Industrial Training, 19, 15-19.
- Wollowick, H. B., & McNamara, W. J. (1969). Relationships of the components of an assessment center to management success. Journal of Applied Psychology, 53, 348-352.
- Wood, R., Boyle, S., & Fullerton, J. (1994). What goes on in assessment centres? Training Tomorrow, 29-30.
- Yan, T. R., & Slivinski, L. W. (1976). A history of the assessment centre method in the military. Ottawa, ON: Queen's Printer.
- Zeller, R. A. (1988). Validity. In J. P. Keeves (Ed.), Educational research methodology and measurement: An international handbook (pp. 322-330). New York: Pergamon.

Appendix A

Letter to A. W. Fraser & Associates

WILLIAM A. DuPERRON
147247 - 41 Avenue
Edmonton, Alberta
(403) 430-7133

March 20, 1990

A. W. Fraser & Associates
2660, 10303 Jasper Avenue
Edmonton, Alberta
T5J 3N6

Attention: Mr. _____

Dear _____:

I am formally requesting your assistance in providing me with a detailed overview as to the preliminary assessment process that was conducted in February of 1988 on 82 _____ managers. I have had a discussion with Mr. _____, Acting Deputy _____, concerning this subject and have assured him that I am not requiring from A.W. Fraser & Associates any confidential data concerning this specific request for assistance. I would like to have very simply a detailed overview as to the assessment project and process which occurred in February 1988.

I am looking forward to your assistance on this matter and will follow up with a telephone call in a few days time.

Sincerely,

W.A. DuPerron

WAD/mla

Appendix B

Letter to Deputy Minister

WILLIAM A. DuPERRON
14724 - 41 Avenue
Edmonton, Alberta, T6H 5N7
(403) 430-7133

July 16, 1990

Mr. _____
Deputy Minister

Dear Mr. _____:

Re: **Request for Access to _____**
Personnel Information Management Systems (P.I.M.S.)
Data for Purposes of Ph.D. Research

As recently discussed with you, this is the formal letter of request to access the P.I.M.S. data bank for purposes of my Ph.D. thesis research.

What I will require is a bio-data profile on all of _____ management group. The Research Ethics Committee at the University of Alberta requires that all such data be provided in a manner so as to ensure full confidentiality. I believe that such a requirement of confidentiality is also in keeping with the personnel policies of the _____ Department and the Government of _____. Therefore, all the requested data should be provided without reference to either employee name or number.

The bio-data management profiles should be provided in the following order of presentation:

1. Management Level
2. Department, Branch, or Location

3. Annual Salary
4. Six Year M.P.A.S. History
5. Date of Birth
6. Gender
7. Years in Current Position
8. Years with the Department
9. Number of Positions Held with the Department
10. Educational Level
11. A.W. Fraser Assessment Summaries for the 1988 Period
12. 1988 Departmental Ratings for Preliminary Assessment Centre
Participants of the Correctional Services Division Management
Group

In recent discussions with Mr. _____, Management Development Consultant to the Department, I have been assured that such data can be organized and assembled very quickly if required of him. Given Mr. _____ familiarity with the P.I.M.S. data bank, his willingness to provide immediate service and his impending departure from the Department I am requesting that such data be provided, as previously approved in discussions with you, at the very earliest available date. There would be a very significant savings in departmental staff time, expense and my own research efforts if approval were given to Mr. _____ to proceed and to provide the requested data (coded where necessary to ensure confidentiality) to your office for review and subsequent release.

When the coded and anonymous bio-data inventory is received I would then follow-up at a later date with an interview schedule that would require approximately 1 1/2 hours time of each of the Senior Management Committee members of the _____ Division.

Upon the completion of my research study I would be most pleased to provide your office with a copy of my thesis.

Your ongoing support and continued co-operation in this effort is greatly appreciated.

Sincerely,

W.A. DuPerron

cc: _____
WAD/mla

Appendix C:
Structured Interview Questionnaire
(1990)

Assessment Centre Method and Public Service Managers Structured Interview Questionnaire

Interview with: _____

Subject of interview: _____ Date: _____

1.	What is your assessment of these aspects of this manager ?	Low	Medium	High
	Problem-solving Skills			
	Supervisory Skills			
	Interpersonal Skills			
	Work Habits			
	Management Potential rating			

2.	After how many years would this manager be ready for promotion to the next level ?	1 YR	2 YRS	≥ 3 YRS

3. The original assessment data in 1988 indicated this manager had a _____ Management Potential rating. After two years, do you feel that it was a accurate assessment?

☐ Yes ☐ No

4. At what level on a five-point rating scale would you assess this manager's current performance?

Very Poor	Poor	Average	Above Average	Outstanding
1	2	3	4	5